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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

The PHOTOFACT Servicer

Set 383
Vol. 39

★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Dec. 1, 1957

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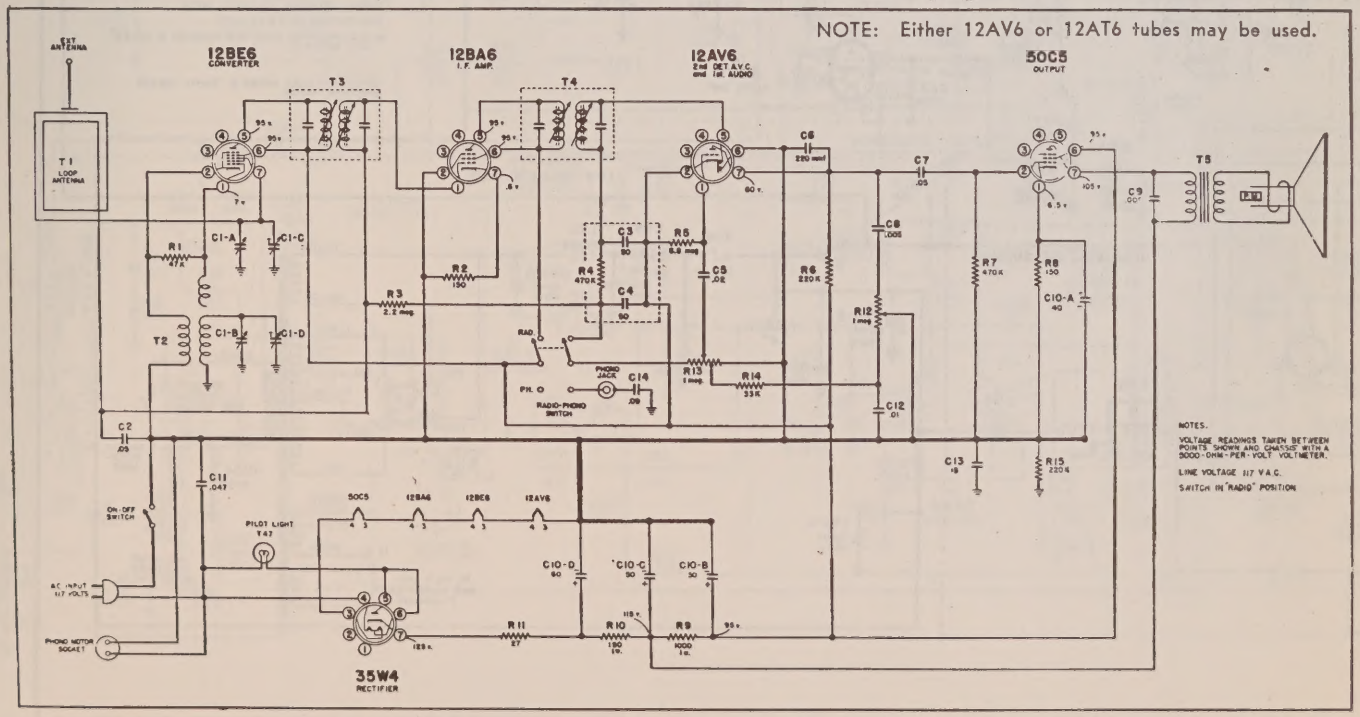
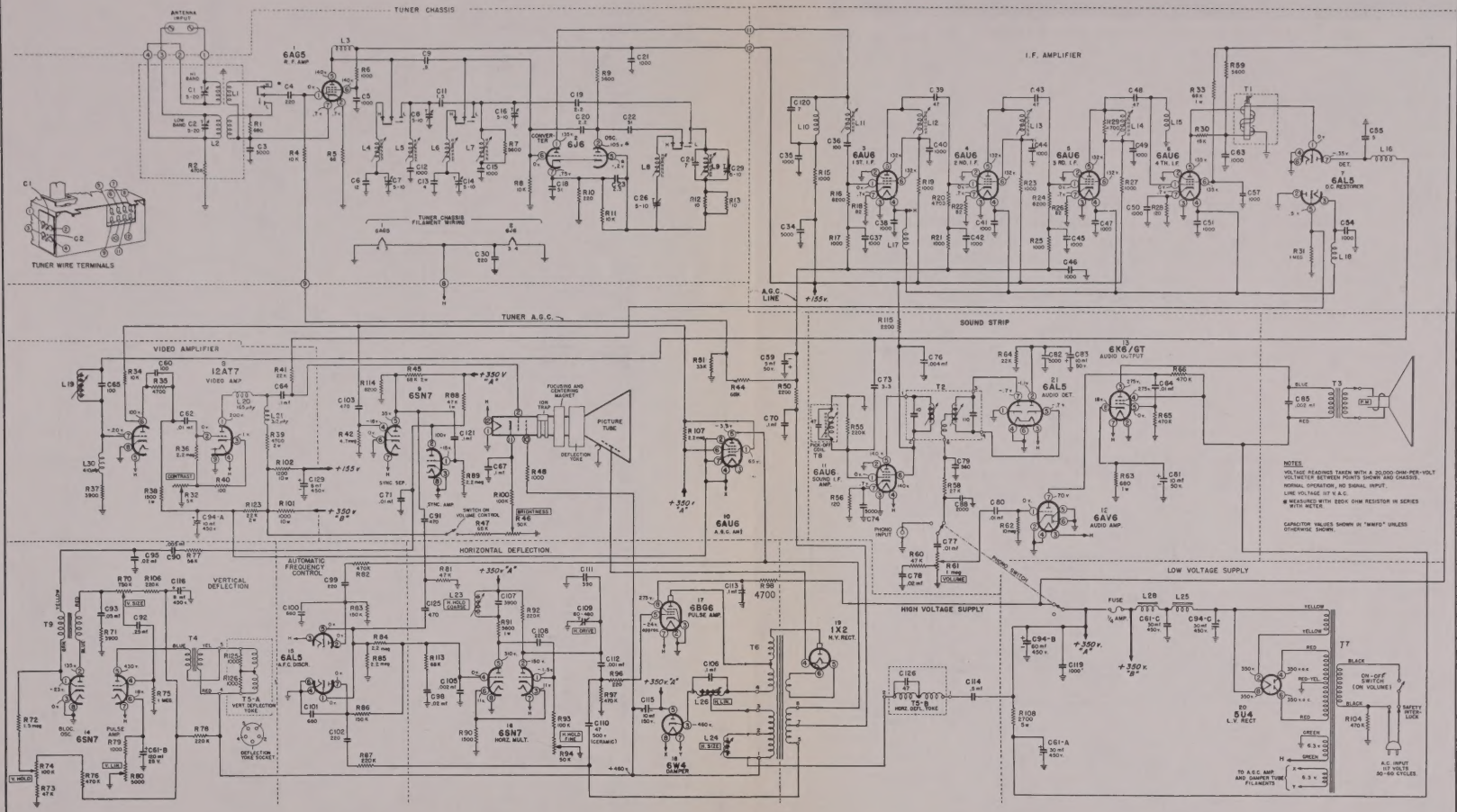
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

Radio schematic diagram below used in television receivers shown on inside pages.



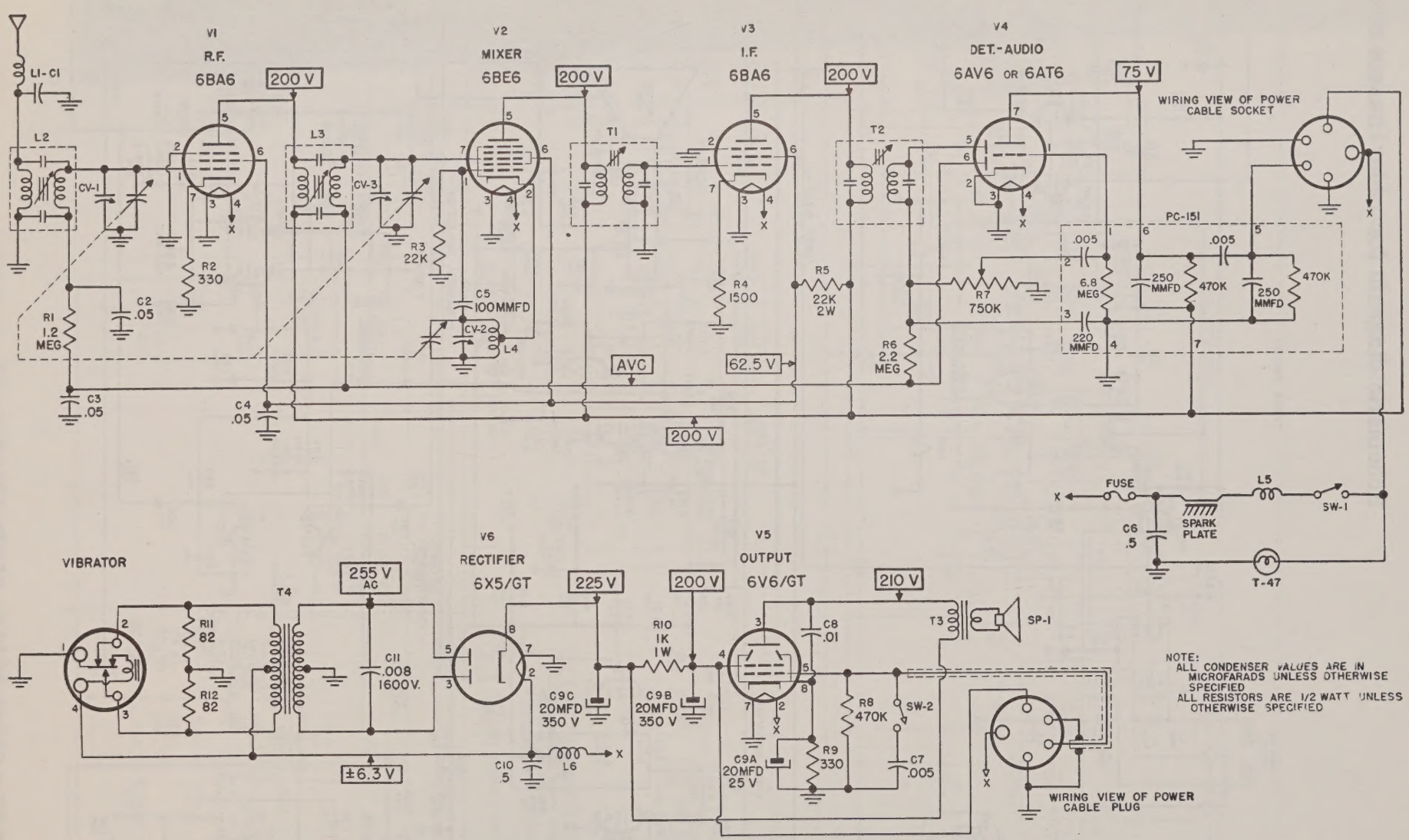
Schematic Diagram Courtesy of Montgomery Ward & Co.

Schematic diagram for radio chassis used in these receivers shown on front page of this folder.



AIRLINE MODELS 05BR-3040A, 05BR-3044A

Schematic Diagram Courtesy of Montgomery Ward & Co.



AIRCASTLE MODEL 610. S551-PC

Schematic Diagram Courtesy of Spiegel, Inc.

PHOTOFACT* Folder
*TRADE MARK

ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, CA322C16, 17, 26, 27, CS322C2, 3, 16, 17, 26, 27, LC322C36, 37, 39, LCS322C36, 37, 39 (Ch. 29AZ1, 29SZ1, B, 29Z1, B)

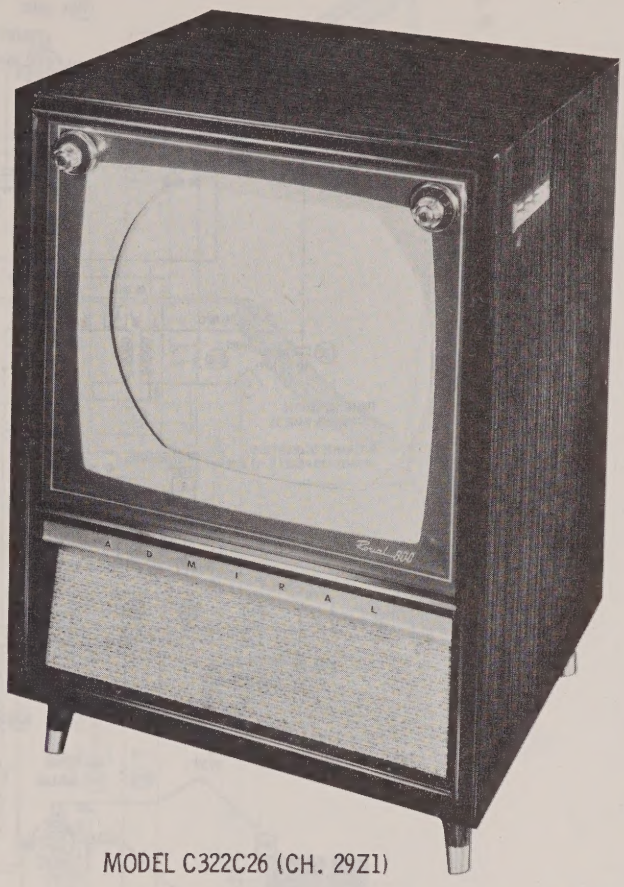
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front .
2. Remove 10 wood screws and 2 metal screws from the rear cover. Remove the rear cover.
3. Remove 2 metal screws holding the side control panel.
4. Remove speaker leads.
5. Remove 6 chassis bolts from the bottom.
6. Remove the chassis.

PICTURE TUBE REMOVAL

1. Remove the HV lead from the HV rectifier socket.
2. Remove the picture tube socket, blue lateral magnet, purity magnet and the convergence yoke assembly.
3. Remove 2 wing nuts and the yoke.
4. Remove 4 hex nuts holding the yoke retainer bracket.
5. Loosen, but do not remove 2 nuts on the sides of the yoke bracket to allow the bracket to tilt upward.
6. Remove the bolt from the tube mounting strap.
7. Remove the picture tube and insulating boots.
8. In replacing boots make certain to replace in correct order.



MODEL C322C26 (CH. 29Z1)

TRADE NAME	Admiral	MODELS	CHASSIS
		C322C2, C322C3, C322C16, C322C17, C322C26, C322C27	29Z1
		CA322C16, CA322C17, CA322C26, CA322C27	29AZ1
		CS322C2, CS322C3, CS322C16, CS322C17, CS322C26, CS322C27	29SZ1
		LC322C36, LC322C36, LC322C37, LC322C39	29Z1B
		LCS322C36, LCS32237, LCS32239	29SZ1B
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Color Television Receiver		
TUBES	Twenty-nine		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 370 Watts, 3.5 Amp. @ 117Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, CA322C16, 17, 26, 27, CS322C2, 3, 16, 17, 26, 27, LC322C36, 37, 39, LCS322C36, 37, 39 (Ch. 29AZ1, 29SZ1, B, 29Z1, B)

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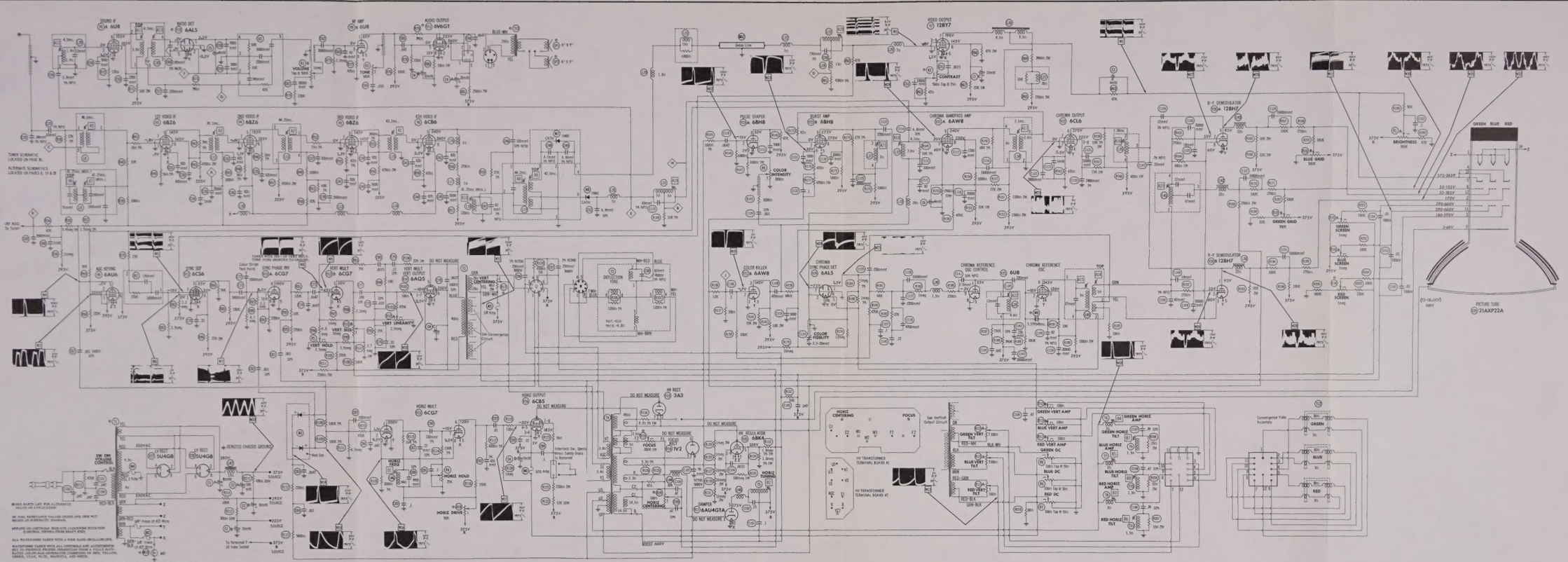
FOLDER 1


SOUND IF
A 6U8
RATIO DET
6AL5
AF AMP
6U8
AUDIO OUTPUT
6V6GT
BLUE-WH
VOLUME
TONE
TUNER SCHEMATIC
LOCATED ON PAGE 8.
ALTERNATE SCHEMATICS
LOCATED ON PAGES 5, 11 & 28
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6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6BZ6
4TH VIDEO IF
6CB6
CATH
1N60
VIDEO OUTPUT
12BY7
CONTRAST
Delay Line
PULSE SHAPER
6BH8
BURST AMP
6BH8
COLOR INTENSITY
CHROMA BANDPASS AMP
6AW8
CHROMA OUTPUT
6CL6
B-Y DEMODULATOR
12BH7
R-Y DEMODULATOR
12BH7
BRIGHTNESS
BLUE GRID
GREEN GRID
GREEN SCREEN
BLUE SCREEN
RED SCREEN
GREEN BLUE RED
PICTURE TUBE
21AXP22A
AGC KEYING
6AU6
SYNC SEP
6CS6
SYNC PHASE INV
6CG7
VERT MULT
VERT OUTPUT
6AQ5
VERT LINEARITY
VERT HOLD
VERT SIZE
VERT CENTERING
DEFLECTION YOKE
COLOR KILLER
6AW8
CHROMA
SYNC PHASE DET
6AL5
COLOR FIDELITY
CHROMA REFERENCE
OSC CONTROL
6U8
CHROMA REFERENCE
OSC
TOP
GRN
YEL
HORIZ OUTPUT
6CB5
DO NOT MEASURE
HV RECT
3A3
HV REGULATOR
6BK4
FOCUS
1V2
HORIZ TUNING
HORIZ HOLD
HORIZ DRIVE
HORIZ MULT
6CG7
HORIZ FREQ
HORIZ CENTERING
BOOST 660V
ON-OFF
CONTROL
LF RECT
5U4GB
HV RECT
5U4GB
330VAC
6.3VAC
BLK-RED
RED-BLK
DENOTES CHASSIS GROUND
HORIZ CENTERING
FOCUS
See Vertical Output Circuit
HV TRANSFORMER
TERMINAL BOARD #1
HV TRANSFORMER
TERMINAL BOARD #2
GREEN VERT AMP
BLUE VERT AMP
RED VERT AMP
GREEN DC
BLUE DC
RED DC
GREEN VERT TILT
BLUE VERT TILT
RED-VERT TILT
GREEN HORIZ AMP
BLUE HORIZ AMP
RED HORIZ AMP
GREEN HORIZ TILT
BLUE HORIZ TILT
RED HORIZ TILT
Convergence Yoke Assembly
GREEN
BLUE
RED
BLK-WH
RED-GRN
GRN-BLK
BLU-WH
RED-WH
GRN-RED
BLU-RED
BLU-GRN
GRN-BLU
WHT-RED
WHT-BLUE
WHT-GRN
WHT-BLK
BLK-YEL
BLK-GRN
BLK-BLU
BLK-RED
YEL-BLK
YEL-RED
YEL-GRN
YEL-BLU
YEL-WH
BLU-BLK
BLU-RED
BLU-GRN
BLU-YEL
BLU-WH
GRN-BLK
GRN-RED
GRN-YEL
GRN-BLU
GRN-WH
RED-BLK
RED-YEL
RED-GRN
RED-BLU
RED-WH
WH-BLK
WH-RED
WH-GRN
WH-BLU
WH-YEL

BLOCK DIAGRAM

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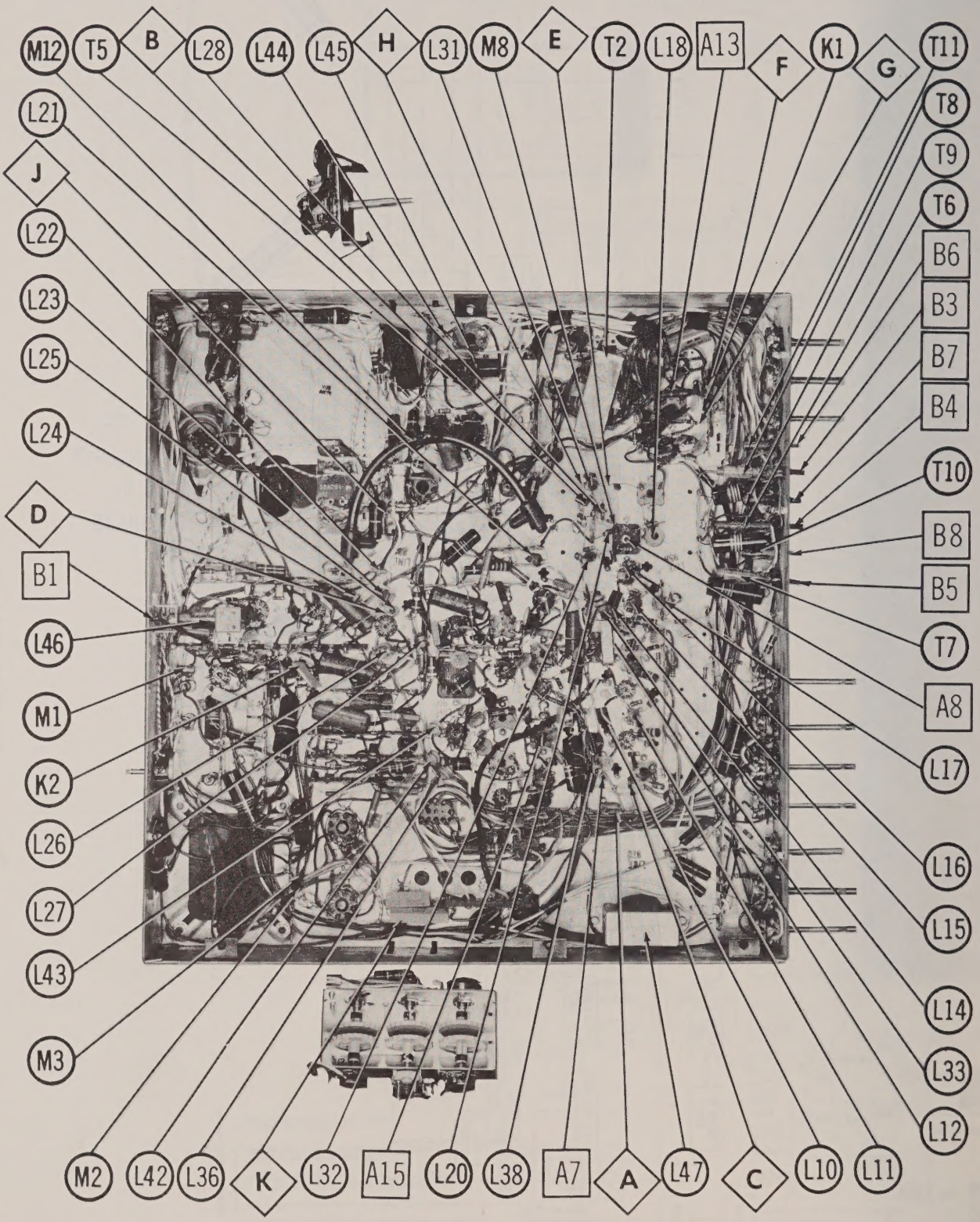
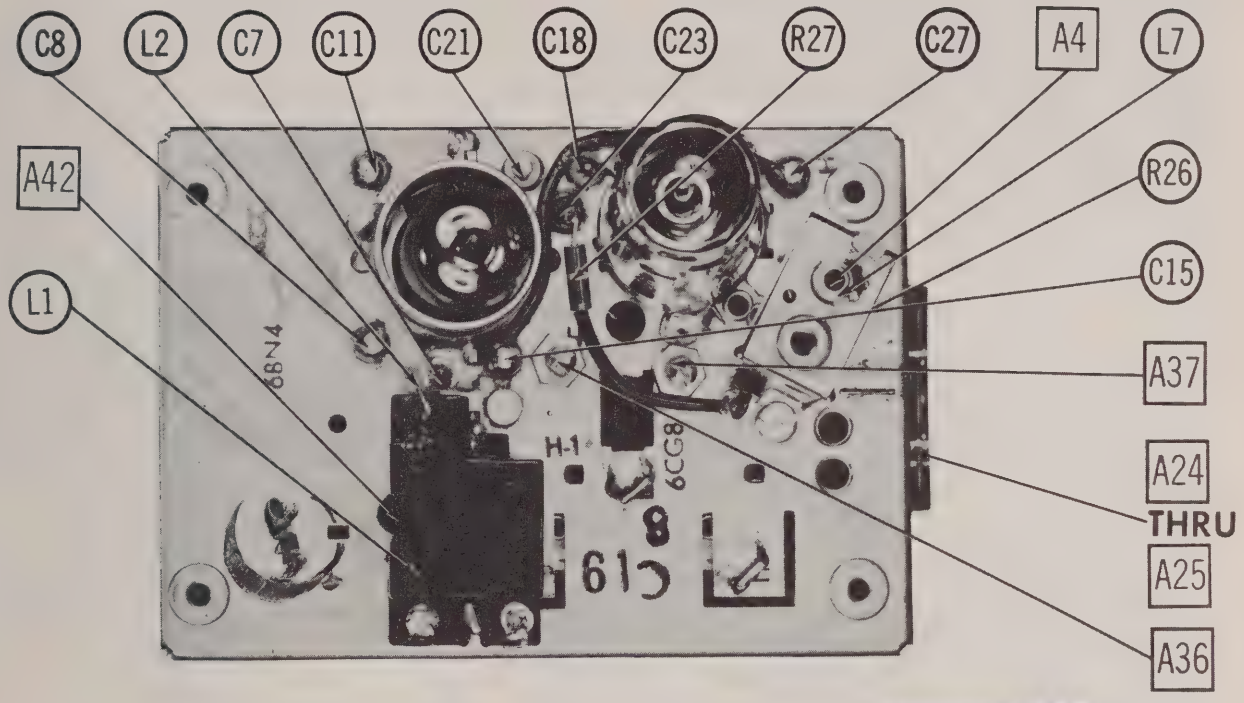


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-TOP VIEW

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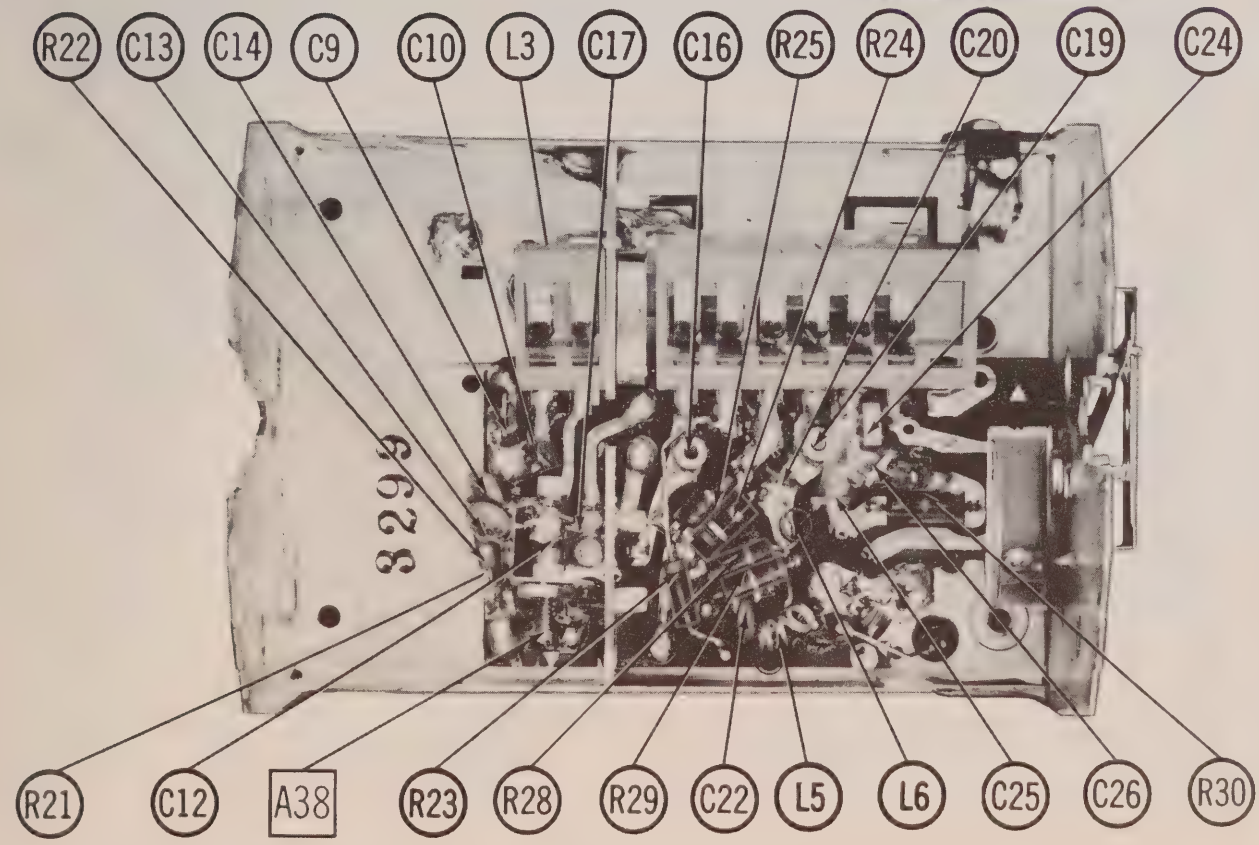


RF TUNER-BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment

VIDEO IF ALIGNMENT

Connect the negative lead of 4 volt bias supply to point Ⓐ . Positive to chassis
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	Direct	High side to ungrounded tube shield Coating over mixer-osc. tube (V2) Low side to chassis	43 .2MC	Any non-interfering channel	DC probe thru network (Fig. 1) to point Ⓑ Common to chassis	A1	Adjust for maximum deflection.
2			44 .25MC	"	"	A2	
3			45 .1MC	"	"	A3	
4			43 .4MC	"	"	A4	Connect a .005MFD capacitor from point Ⓒ to chassis Adjust A4 for maximum deflection
5	"	"	44 .0MC	"	"	A5	Adjust for maximum deflection Remove the .005MFD from point Ⓒ and chassis
6	"	"	41 .25MC	"	"	A6	Adjust for MINIMUM deflection
7	"	"	47 .25MC	"	"	A7	Adjust for MINIMUM deflection Repeat step 6
8	"	"	44 .2MC	"	DC probe to point Ⓓ Common to chassis	A8	Detune A10 by inserting a piece of iron into the core. Detune A9 by misadjusting its own slug. Adjust A8 for maximum deflection.
9			43 .4MC	"	"	A9	Adjust for maximum deflection. Remove piece of iron from A10
10			41 .25MC	"	"	A10	Adjust for MINIMUM deflection

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11	Direct	High side to ungrounded tube shield Coating over mixer-osc tube (V2) Low side to chassis	43 .5MC (10MC Swp)	42 .5MC 44 .75MC 45 .75MC	Any non-interfering channel	Vert Amp thru network (Fig 1) to point Ⓓ Low side to chassis		Check for response similar to Fig. 2 with markers as shown. If necessary, retouch A1 SLIGHTLY for equal peaks. Retouch A3 to place 45.75MC at 50%.
12	"	"	"	42 .17MC 45 .75MC	"	Vert Amp thru network (Fig. 1) to point Ⓑ		Check for response similar to Fig. 3.

SOUND IF ALIGNMENT

A TV station signal is preferred to a signal generator. If a station is used, connect the antenna, set the channel selector to the strongest signal available and tune in a picture. If a signal generator is used, disconnect the antenna and short the antenna terminals together

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13	Direct	High side to point Ⓔ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓔ . Common to chassis	A11, A12	Adjust for maximum deflection.
14		"	"	"	DC probe to point Ⓓ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting

SUB-CARRIER ALIGNMENT

Connect a .01MFD capacitor between pin 7 (grid) of the 6AW8 (V21) and chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
15	None	Not used	Not used	Any	DC probe thru 100K to pin 7 (plate) of 6AL5 (V24). Common to chassis.	A14, A15	Adjust for maximum deflection. Repeat until maximum is obtained. Remove .01MFD capacitor from pin 7 of V21.

CHROMA ALIGNMENT

Turn the color intensity control (R8) clockwise about 3/4 of its range.
Connect a clip lead from point Ⓐ to chassis.
Connect a clip lead from pin 1 (grid) of the 6CB6 (V6) to chassis.
Detune A19 by turning out about 3 turns.
Connect a .03MFD capacitor from terminal 1 to terminal 3 of L41.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
16	3300Ω Carbon Resistors	High side to point Ⓕ . Low side to chassis	3 .58MC (Unmod)	Any non-interfering channel	DC probe thru detector (Fig. 4) to pin 1 (plate) of 12BH7 (V26) Common to chassis	A16	Adjust for maximum deflection.
17	"	"	3.1MC	"	"	A17	"
18	"	"	4 .1MC	"	"	A18	Adjust for maximum deflection. Remove ground from pin 1 of V6. Disconnect signal generator .
19	None	Not used	Not used	Any black and white station.	"	A19	Adjust fine tuning for maximum deflection. Adjust A19 for MINIMUM deflection. Remove clip lead between point Ⓐ and chassis. Remove .03MFD capacitor from L41. Remove VTVM and detector.

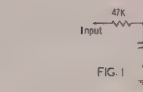


FIG. 1

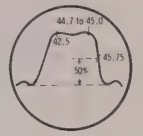


FIG. 2

FIG 3

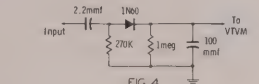


FIG 4

FIG. 5

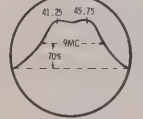


FIG. 6

COLOR SYNC - COLOR PHASE ALIGNMENT

1. Connect a clip lead from point Ⓐ to chassis Connect a color bar generator to the antenna terminals and adjust the fine tuning for MINIMUM 920KC beat in the picture
2. Connect the vertical amplifier of the scope to pin 4, 5 or 13 (cathodes) of the picture tube Adjust A20 (3 .58MC trap) for MINIMUM sub-carrier on the color bar scope pattern. The scope gain should be set high for this adjustment
3. Connect the DC probe of the VTVM to pin 7 (plate) of the 6AL5 (V24) Common to chassis. Set the VTVM to the negative 100 or 150 volt scale. Adjust A21 for maximum negative voltage. This should be between -80 and -100 volts.
4. Connect the DC probe of the VTVM to pin 1 (cathode) of the 6AL5 (V24). Common to chassis Adjust A22 so that the color is in sync and the voltage reading on the VTVM is 3 volts negative.
5. Set the color intensity and the contrast controls for low level color bars. Set the color fidelity to the center of its range
6. Set the color bar generator for B-Y output. Connect the vertical amplifier of the scope to pin 5 (red grid) of the picture tube. Low side to chassis. Touch-up A16 so that the B-Y output at the R-Y demodulator is zero as observed on the scope.
7. Set the color bar generator for R-Y output Connect the vertical amplifier of the scope to pin 12 (blue grid) of the picture tube. Low side to chassis. Adjust A23 so that the R-Y output at the B-Y demodulator output is zero as observed on the scope
8. Connect the DC probe of the VTVM to pin 3 (plate) of the 6BH8 (V23). Common to chassis. Tune in a black and white station and turn the color intensity control to maximum. The meter should read at least -8 volts.

VHF OSCILLATOR ALIGNMENT FOR TUNERS #94D131-1, 94D131-2 AND 94E107-1

Connect the negative lead of a 4 volt bias supply to point Ⓐ Positive to chassis
Connect the negative lead of a 3 volt bias supply to point Ⓑ Positive to chassis
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20	Two 1200 Carbon Resistors	Across antenna terminals with 120Ω in each lead	213MC	211 .25MC 215 .75MC	13	Vert. Amp. thru decoupling network (Fig. 1) to point Ⓓ Low side to chassis	A34	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should fall at 50%
			207MC	205 .25MC 209 .75MC	12		A35	
			201MC	199 .25MC 203 .75MC	11		A36	
			195MC	193 .25MC 197 .75MC	10		A37	
			189MC	187 .25MC 191 .75MC	9		A38	
			183MC	181 .25MC 185 .75MC	8		A39	
			177MC	175 .25MC 179 .75MC	7		A30	
			85MC	83 .25MC 87 .75MC	6		A31	
			79MC	77 .25MC 81 .75MC	5		A32	
			89MC	87 .25MC 91 .75MC	4		A33	
			63MC	61 .25MC 65 .75MC	3		A34	
			57MC	55 .25MC 59 .75MC	2		A35	

VHF OSCILLATOR ALIGNMENT FOR TUNER #94E144-8

Always make adjustments on the lowest channel first, then work up, in order of channel number to the highest channel.
Turn the set on and allow the receiver to warm-up for 15 minutes. Set the channel selector to the lowest channel operating in the area and set the fine tuning to the center of its range by rotating approximately 2 complete turns in one direction and then back 1/4 turn.
Using a 1/8" blade non-metallic alignment tool, carefully adjust oscillator slug until sound bars just appear in the picture. Then turn the slug in the direction of best picture until the sound bars just disappear. Repeat this procedure for each remaining channel adjusting them in order of their channel number. NOTE: When two slugs are visible from the front of the tuner, adjust the top one.

VHF RF AND MIXER ALIGNMENT FOR TUNERS #94D131-1 AND 94D131-2

Connect bias as under "VHF Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
To perform step 22, increase the bias at point Ⓐ to a voltage just before cut-off of the RF tube and at the same time increase sweep input signal to maintain 3 volts peak to peak on the scope at point Ⓓ .

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
21	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	199MC	193 .25MC 197 .75MC	10	Vert. Amp. thru network (Fig. 1) to point Ⓓ Low side to chassis.	A36, A37	Adjust A36 and A37 for response similar to Fig. 5 with markers shown.
23	"	"	"	"	"	"	A38	Adjust for flat response. (See Fig. 8).
23	"	"	213MC	211 .25MC 215 .75MC	13	"		Check for response similar to Fig. 5. If video marker falls below 50% on any channel, make compromise adjustment of A36 and A37 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected
			207MC	205 .25MC 209 .75MC	12			
			201MC	199 .25MC 203 .75MC	11			
			189MC	187 .25MC 191 .75MC	9			
			183MC	181 .25MC 185 .75MC	8			
			177MC	175 .25MC 179 .75MC	7			
			85MC	83 .25MC 87 .75MC	6			
			79MC	77 .25MC 81 .75MC	5			
			69MC	67 .25MC 71 .75MC	8			
			63MC	61 .25MC 65 .75MC	3			
			57MC	55 .25MC 59 .75MC	2			

ADMIRAL MODELS 6322C2, 3, 16, 17, 26, 27, CA322C16, 17, 20, 21, 22, 23, 26, 27, CC322C36, 37, 39, CC3322C36, 37, 39 (CH. 29AR1, 29Z1, 8, 29Z1, 8)

FOLDER 1

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT FOR TUNER #94E107-1

Connect bias as under "VHF Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
24.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC	10	Vert. Amp. thru network (Fig. 1) to point Ⓓ. Low side to chassis.	A39, A40, A41	Adjust A39, A40 and A41 for response similar to Fig. 5 with video marker at 50%.
25.	"	"	213MC	211.25MC	13	"		Check for response similar to Fig. 5. If markers fall below 50% on any channel, make compromise adjustments of A39, A40 and A41 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC	12			
			201MC	199.25MC	11			
			189MC	187.25MC	9			
			183MC	181.25MC	8			
			177MC	175.25MC	7			
			85MC	83.25MC	6			
			79MC	77.25MC	5			
			69MC	67.25MC	4			
			63MC	61.25MC	3			
			57MC	55.25MC	2			

IF TRAP ALIGNMENT

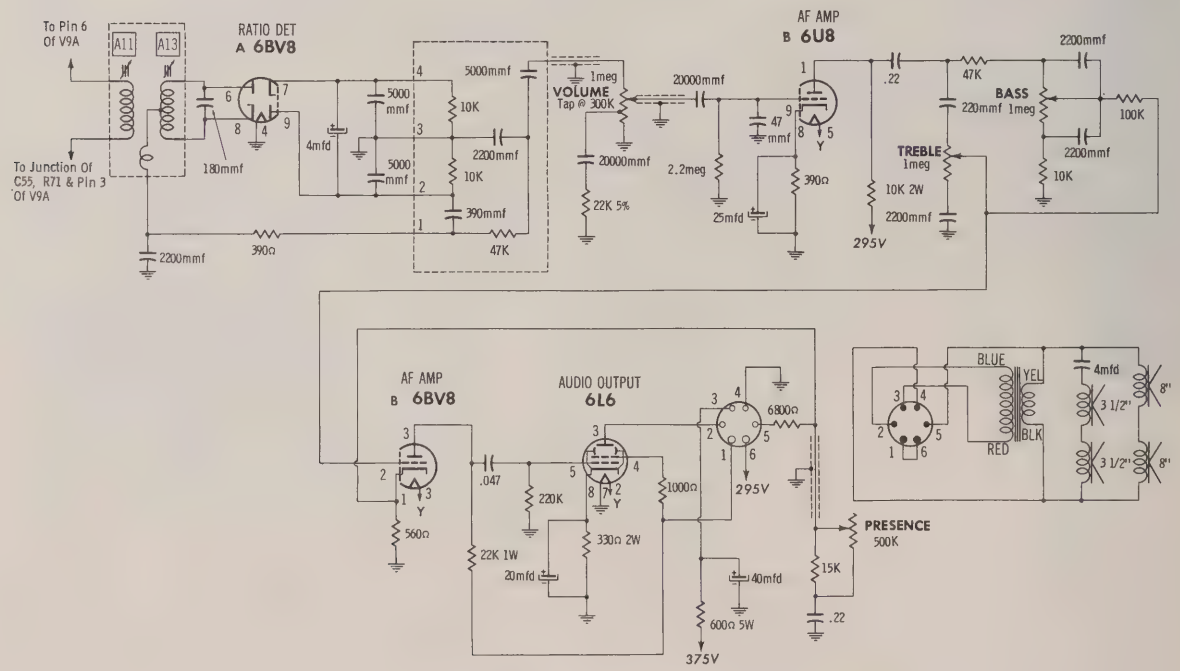
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
26.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	43.0MC (7MC Swp)	Not used	Any non-interfering channel	Vert. Amp. thru decoupling network (Fig. 1) to point Ⓓ. Low side to chassis.	A42	Adjust for MINIMUM response on scope.

UHF IF ALIGNMENT FOR TUNER #94E107-1

Connect the negative lead of a 3 volt bias supply to point Ⓚ. Positive to chassis.
Remove the mixer crystal from the UHF tuner.
Remove the IF input cable from the tuner IF output socket.
If a separate marker generator is used, couple loosely to the high side of the sweep generator output cable.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
27.	100Ω Resistor	High side to point Ⓛ. Low side to chassis.	43.5MC (12MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 10K to point Ⓜ. Low side to chassis.	A43	Check for response curve similar to Fig. 6. If not within tolerance, adjust A43 for maximum gain and symmetry similar to Fig. 6.
28.	"	"	"	"	"	Vert. Amp. thru decoupling network (Fig. 1) to point Ⓓ. Low side to chassis.		Check for response curve similar to Fig. 5. If necessary, make SLIGHT compromise adjustment of A43 for desired response.



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

Alternate Audio Circuit Used In Chassis 29Z18

ALTERNATE SOUND CIRCUIT

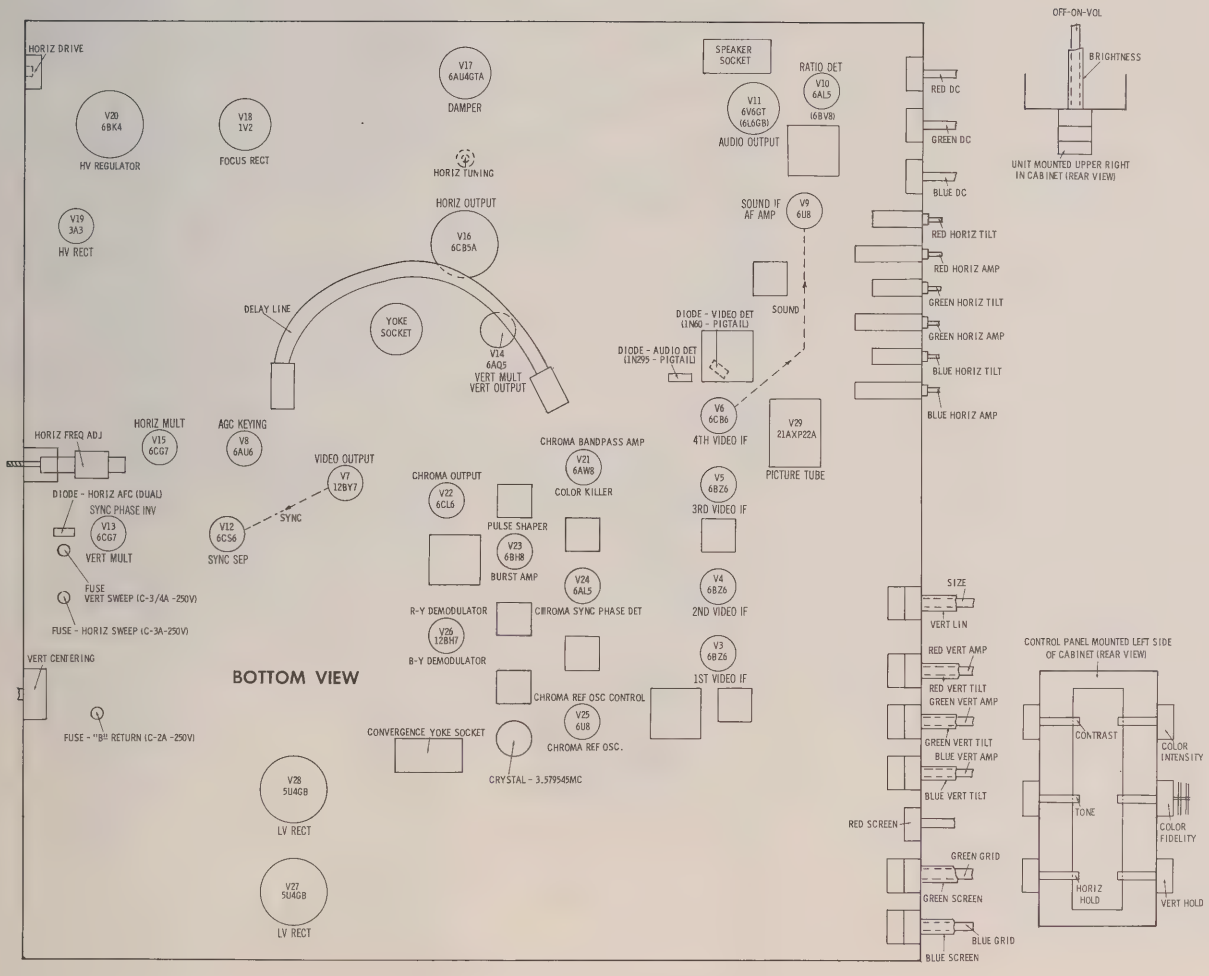
CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BN4	0Ω	4Meg	0Ω	.1Ω	†7200Ω	0Ω	4Meg		
V2	6CG8	10K	†20K	0Ω	0Ω	.1Ω	†13K	†24K	0Ω	224K
V3	6BZ6	150K	56Ω	.1Ω	0Ω	†5900Ω	†5900Ω	0Ω		
V4	6BZ6	150K	56Ω	.1Ω	0Ω	†5900Ω	†5900Ω	0Ω		
V5	6BZ6	68K	62Ω	.1Ω	0Ω	†5900Ω	†5900Ω	0Ω		
V6	6CB6	.1Ω	470Ω	.1Ω	0Ω	†5500Ω	†5500Ω	0Ω		
V7	12BY7	• 85Ω	4300Ω	0Ω	.1Ω	.1Ω	0Ω	†6500Ω	†17K	0Ω
V8	6AU6	†45K	†450Ω	120K	120K	1.5Meg	†17Ω	†450Ω		
V9	6U8	†100K	3.8Ω	†10K	0Ω	.1Ω	†10K	120Ω	470Ω	2.2Meg
V10	6AL5	10K	10K	.1Ω	0Ω	INF	0Ω	INF		
V11	6V6GT	NC	.1Ω	■ 2700Ω	■ 2500Ω	220K	NC	0Ω	330Ω	
V12	6CS6	5200Ω	0Ω	0Ω	.1Ω	†50K	†25K	3.3Meg		
V13	6CG7	• ‡3.5Meg	• 2.3Meg	0Ω	0Ω	.1Ω	†13K	1.5Meg	2200Ω	0Ω
V14	6AQ5	• 1.7Meg	48Ω	0Ω	.1Ω	■ 2900Ω	■ 2500Ω	• 1.7Meg		
V15	6CG7	• ■ 35K	550K	2000Ω	0Ω	.1Ω	• ■ 160K	• 160K	2000Ω	0Ω
V16	6CB5A	■ 12K	.1Ω	22Ω	1Meg	1Meg	22Ω	0Ω	■ 12K	TOP CAP ‡24Ω
V17	6AU4GTA	NC	NC	¶	NC	■ 1Ω	NC	.1Ω	0Ω	
V18	1V2	NC	NC	NC	30Meg	30Meg	30Meg	NC	NC	• ‡37K
V19	3A3		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡500Ω
V20	6BK4	¶	150K	NC	NC	1Meg	NC	150K	NC	TOP CAP INF
V21	6AW8	0Ω	2.7Meg	†13K	0Ω	.1Ω	2300Ω	1.2Meg	†11K	†3000Ω
V22	6CL6	470Ω	2.6Ω	†16K	.1Ω	0Ω	†1000Ω	0Ω	†16K	NC
V23	6BH8	• 550Ω	6800Ω	†47K	0Ω	.1Ω	5200Ω	90Ω	†1500Ω	†1500Ω
V24	6AL5	2Meg	1Meg	0Ω	.1Ω	100Ω	0Ω	1Meg		
V25	6U8	†380K	100K	†37K	.1Ω	0Ω	†3700Ω	0Ω	0Ω	4Meg
V26	12BH7	†18K	5800Ω	3300Ω	.1Ω	.1Ω	†35K	5800Ω	3300Ω	0Ω
V27	5U4GB	NC	¶	NC	9.5Ω	NC	9Ω	NC	¶	
V28	5U4GB	NC	¶	TP	9.5Ω	TP	9Ω	NC	¶	
V29	21AXP22A	120K	• 100K	• 500K	• †47K	• †47K	• 75K	• 400K	NC	32Meg
V30		PIN 10 NC	PIN 11 • 450K	PIN 12 • 80K	PIN 13 • †47K	PIN 14 120K				

- • THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION
- † MEASURED FROM PIN 8 OF V28.
- ‡ MEASURED FROM PIN 3 OF V17.
- ■ MEASURED FROM PIN 7 OF YOKE SOCKET.
- ¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
- NC NO CONNECTION .
- TP TIE POINT.

TUBE PLACEMENT CHART



PROPERTY OF
[illegible]
DENVER COLORADO

ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, CA322C16, 17, 26, 27, CS322C2, 3, 16, 17, 26, 27, LC322C36, 37, 39, LCS322C36, 37, 39 (Ch. 29AZ1, 29SZ1, B, 29Z1, B)

FOLDER 1

ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, CA322C16, 17, 26, 27, CS322C2, 3, 16, 17, 26, 27, LC322C36, 37, 39, LCS322C36, 37, 39 (Ch. 29AZ1, 29SZ1, B, 29Z1, B)

CHASSIS BOTTOM VIEW — CAPACITOR IDENTIFICATION (C1 THRU C111)

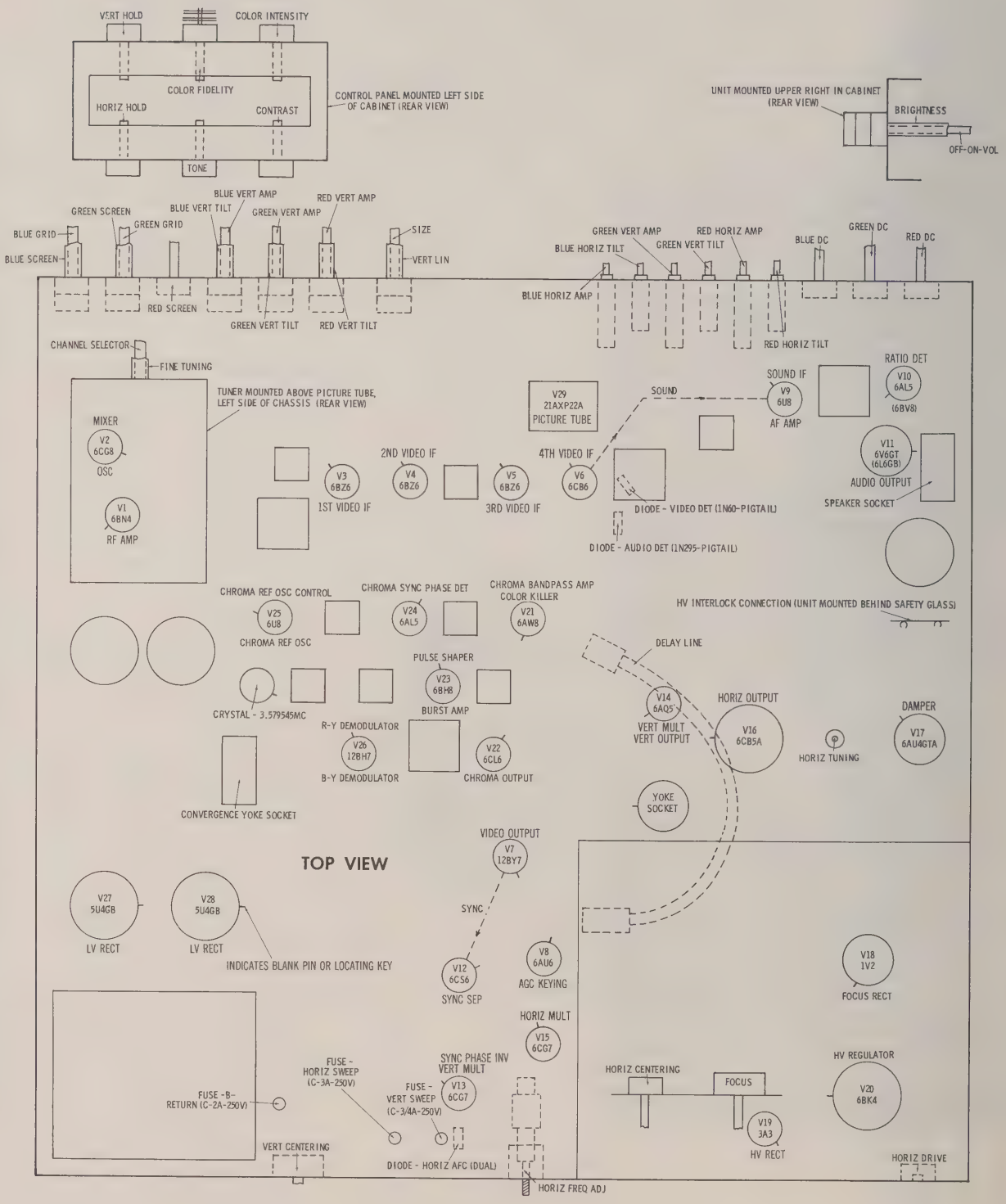
ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, CA322C16, 17, 26, 27, CS322C2, 3, 16, 17, 26, 27, LC322C36, 37, 39, LCS322C36, 37, 39 (Ch. 29AZ1, 29SZ1, B, 29Z1, B)

CHASSIS BOTTOM VIEW — RESISTOR IDENTIFICATION (R1 THRU R105)

ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, CA322C16, 17, 26, 27, CS322C2, 3, 16, 17, 26, 27, LC322C36, 37, 39, LCS322C36, 37, 39 (Ch. 29AZ1, 29SZ1, B, 29Z1, B)

CHASSIS BOTTOM VIEW — CAPACITOR NOTIFICATION (CHU2 THRU CHU3)

DENVER, COLORADO



TUBE PLACEMENT CHART

ALTERNATE TUNER SCHEMATIC

CHASSIS BOTTOM VIEW — RESISTOR IDENTIFICATION (R108 THRU R215)

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control to the center of its range. Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Turn the horizontal drive control (R18) clockwise until drive line(s) appear, then back until line(s) just disappear. If no drive lines appear, set fully clockwise.

The horizontal tuning adjustment of the color set is much more important than for black and white receivers. While misadjustment of the horizontal tuning may not be noticable in the picture, it can result in damage to the horizontal output tube or associated components. For this reason, the tuning is set at the factory and need not be readjusted unless the horizontal output tube, horizontal tuning coil or other associated components have been replaced. In such case the following procedure for adjusting the tuning is recommended.

1. Remove fuse (M6) from its holder.
2. Connect a 0-500 milliammeter across the fuse holder with the positive terminal to the top cap.
3. Tune in a black and white picture. Adjust the brightness, contrast, focus and vertical controls for normal operation.
4. Adjust the horizontal tuning slug (B2) for MINIMUM current reading. Repeat adjustment of the drive control as outlined above.
5. Adjust the horizontal centering control (R20) to center the picture.
6. Make sure that the line voltage is maintained at 117 volts.
7. Set the contrast and brightness controls are fully counter clockwise (beam cut-off).
8. Connect a 0-1 DC milliammeter in series with the cathode (pin 1) of the regulator tube (6BK4, V20). A test jumper is provided for meter insertion. CAUTION: Meter is at B+ potential. Be sure to isolate from chassis.
9. Readjust B2 in the direction of less inductance, (slug moving outward from coil) until the cathode current of the horizontal output tube is approximately 200 milliamperes. Do not exceed 210 milliamperes. The high voltage should range between 18.5 and 21.5KV with regulator current of 750 to 1000 microamperes. Optimum setting is 200 milliamperes output tube current with 20KV high voltage and regulator current of 950 microamperes.

Remove the test equipment and replace test jumper wire and fuse.

COLOR STRIPE TEST

The test point located on the rear apron of the chassis is for the purpose of checking color reception in those areas where color stripes are transmitted during black and white transmission. To make color stripe test, proceed as follows:

1. Tune in a black and white station transmitting a color stripe.
2. Connect a clip lead from the color stripe test point to chassis. The picture will shift to the left and permit viewing of the color stripe on the right side.
3. If necessary, readjust the fine tuning, with the color intensity control set near maximum. Stripes should appear in color. If not, the receiver is not reproducing color.
4. To check color intensity, vary the color fidelity throughout its range. At some settings the color stripe should appear yellowish green, if not, receiver will not reproduce correct colors.
5. If the color stripe appears to contain colored bars, which keep changing colors, the receiver is not in "Color Sync". See "Color Sync Alignment".

COLOR PURITY ADJUSTMENTS

STEP	ADJUST	REMARKS
1.	Contrast Control	MINIMUM contrast.
2.	Brightness Control	Near maximum.
3.	Green and blue screens	MINIMUM.
4.	Green and blue grids	MINIMUM.
5.	Red screen	Bright red raster.
6.	Rim magnets	Best purity around raster edges.
7.	If entire raster appears red, proceed with steps 21 and 27. If the entire raster cannot be made pure red, continue with step 8.	
8.	Rim magnets	MINIMUM. (Pull all the way out.)
9.	Red, green and blue horizontal convergence amplitude slugs (B3, B4 and B5).	Adjustment screw extending 3/8" outward from each coil form.
10.	Red, green and blue horizontal convergence tilt slugs (B6, B7 and B8).	Adjustment screw extending 3/8" outward from each coil form.
11.	Red, green and blue vertical amplitude (R11B, R12B and R13B).	Fully counter clockwise.
12.	Red, green and blue vertical tilt (R11A, R12A and R13A).	Center of rotation.
13.	Purity Magnet Rings	Colored tabs together.
14.	Connect a white dot generator to the receiver.	
15.	Contrast control	Fully clockwise.

COLOR PURITY ADJUSTMENTS (CON'T)

16.	Red, green and blue screens.	Fully counter clockwise.
17.	Green and blue grids	Fully counter clockwise.
18.	Brightness Control	Until the raster is just extinguished.
19.	Red, green and blue screens and the blue green grids.	For small equal dots. If necessary, readjust focus.
20.	Red, green and blue DC, and blue lateral magnet.	Small white dots at the center of the screen.
21.	Alternately check the purity of the red, green and blue fields by turning the appropriate grid and screen controls and repeating step 6 for each field if necessary.	
22.	If color impurity exists, set controls for a red raster and continue with step 23.	
23.	Loosen the wing bolt on each side of the yoke.	
24.	Purity magnet rings.	Spread the tabs apart and rotate the entire purity magnet assembly for purest overall red field. If necessary, repeat until best purity is obtained.
25.	Deflection yoke.	Move back and forth to locate point of purest red field. If necessary, repeat steps 24 and 25.
26.	Rim magnets	Adjust by pushing in or pulling out and rotating for best edge purity. It may be necessary to compromise.
27.	Repeat step 21. Tighten the wing bolts securing the yoke after the individual red, green and blue fields appear pure without further adjustment of step 6.	

CONVERGENCE ADJUSTMENTS

STEP	ADJUST	REMARKS
1.	Perform steps 14 thru 19 under "Color Purity Adjustments".	
2.	Check the dot convergence. If the convergence appears to need only touch-up adjustments, disregard steps 3 thru 6.	
3.	Red, green and blue vertical tilt controls.	Set to the center of rotation.
4.	Red, green and blue vertical amplitude controls.	Set fully counter clockwise.
5.	Red, green and blue horizontal tilt slugs.	Adjust so that the screw extends 3/8" from the coil form end.
6.	Red, green and blue horizontal amplitude slugs.	Adjust so that the screw extends 3/8" from the coil form end.
7.	Red, green and blue DC; and blue lateral magnets.	Adjust for white dots in the central area of the raster.
8.	Switch generator to vertical line pattern.	
9.	Green and blue grids; red, green and blue screens.	Adjust for equal intensity vertical white line pattern.
10.	Red and green vertical amplitude; and red and green vertical tilt.	Adjust for straight red and green vertical lines (using blue lines as reference). Repeat until correct results are obtained.
11.	Red and green DC	Converge red and green vertical lines over blue lines at the center of the screen. If necessary, repeat step 10.
12.	Blue vertical tilt and blue vertical amplitude	Switch to horizontal line pattern. Adjust blue lines so that they are equally spaced or coincident with red and green horizontal lines from top to bottom at center of the screen. If necessary, repeat step 11.
13.	Switch to vertical line pattern. The red, green and blue vertical lines at center of screen should be converged forming a white line. If not, repeat steps 10 and 11.	
14.	Switch to horizontal line pattern. The red, green and blue horizontal lines should coincide at the center of the screen. If not, repeat step 12.	
15.	Blue horizontal amplitude and blue horizontal tilt.	Turn fully counter clockwise.
16.	Blue horizontal amplitude.	Adjust clockwise for downward bow of blue horizontal line SLIGHTLY to the right of the center.
17.	Blue horizontal tilt.	Adjust clockwise to make blue center horizontal line as straight as possible.
18.	Red, green and blue DC	Adjust for convergence at center of the screen.

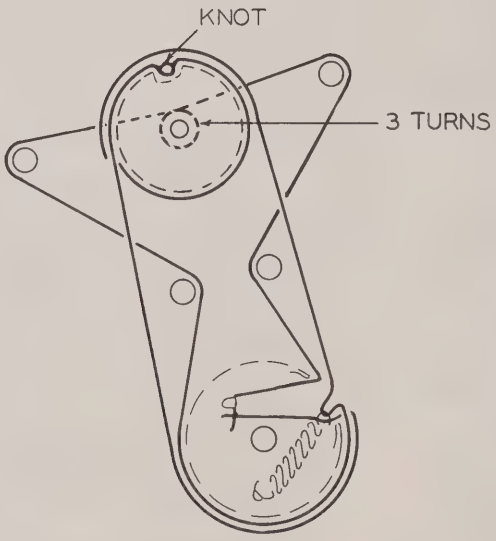
MISCELLANEOUS ADJUSTMENTS (cont.)

CONVERGENCE ADJUSTMENTS (Con't)

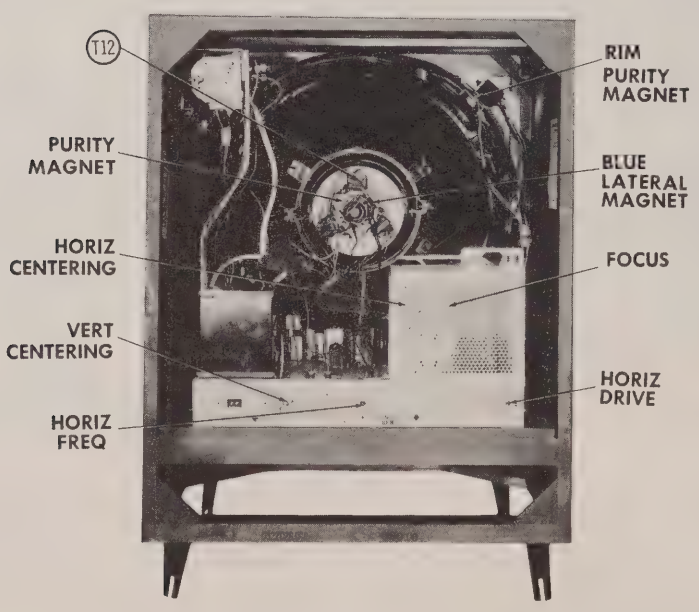
19.	Repeat steps 15 thru 18 for red and green horizontal lines. NOTE: The bow of the red and green horizontal lines will be SLIGHTLY upward to the right of the center of the screen.
20.	Switch generator to the dot pattern. Observe the overall convergence of the dot pattern. Touch-up the adjustments for clearly defined white dots at the center area of the screen

BLACK AND WHITE TRACKING ADJUSTMENT

STEP	ADJUST	REMARKS
1.	Contrast control.	Fully counter clockwise.
2.	Green and blue grids.	Fully counter clockwise.
3.	Red, green and blue screens.	One-third from fully counter clockwise.
4.	Brightness control.	Fully clockwise, then counter clockwise until raster is just extinguished.
5.	Green grid.	Fully clockwise, then counter clockwise until raster is just extinguished.
6.	Blue grid.	Fully clockwise, then counter clockwise until raster is just extinguished.
7.	Tune in a black and white signal and check color of picture. The picture should remain black and white throughout the usable range of the contrast and brightness controls. If the picture appears greenish, perform steps 8 and 10. If the picture appears bluish, perform steps 9 and 11. If the picture appears reddish, perform step 12. If the picture still is not black and white, repeat the entire procedure.	
8.	Green screen.	Turn very SLIGHTLY clockwise.
9.	Blue screen	Turn very SLIGHTLY clockwise.
10.	Green grid.	Very SLIGHTLY counter clockwise until the picture is black and white.
11.	Blue grid .	Very SLIGHTLY counter clockwise until the picture is black and white.
12.	Red screen.	Very SLIGHTLY counter clockwise until the picture is black and white.



UHF DRIVE CORD STRINGING



CABINET—REAR VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BN4	
V2	Mixer-Oscillator	6CG8	
V3	1st. Video IF Amp.	6BZ6	
V4	2nd. Video IF Amp.	6BZ6	
V5	3rd. Video IF Amp.	6BZ6	
V6	4th. Video IF Amp.	6CB6	
V7	Video Output	12BY7	
V8	AGC Keying	6AU6	
V9	Sound IF Amp.-AF Amp.	6U8	
V10	Ratio Det.	6AL5	Note 1
V11	Audio Output	6V6GT	Note 2
V12	Sync Sep.	6CS6	
V13	Sync Amp.-Vert. Mult.	6CG7	
V14	Vert. Mult.-Vert. Output	6AQ5	
V15	Horiz. Mult.	6CG7	
V16	Horiz. Output	6CB5A	

ITEM No.	USE	TYPE	NOTES
V17	Damper	6AU4GTA	
V18	Focus Rectifier	1V2	
V19	HV Rectifier	3A3	
V20	HVRegulator	6BK4	
V21	1st. Chroma Bandpass Amp.-Color Killer	6AW8	
V22	Chroma Output	6CL6	
V23	Pulse Shaper- Burst Amp.	6BH8	
V24	Chroma Sync Phase Det.	6AL5	
V25	Chroma Ref. Osc. Control-Chroma Ref. Osc.	6U8	
V26	R-Y Demodulator - B-Y Demodulator	12BH7	
V27	LV Rectifier	5U4GB	
V28	LV Rectifier	5U4GB	

Note 1. Chassis 29Z1B, 29SZ1B use a 6BV8 in this application.
Note 2. Chassis 29Z1B, 29SZ1B use a 6L6GB in this application.

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L. F. [illegible] NSHIP
[illegible] MEADE S.
DENVER, COLORADO

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	ADMIRAL PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V29	21AXP22A	21AXP22A	21AXP22A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬80	450	67D15-137	AFH4-18-10	D0179	FP450	TMQ-122	Q-067 MT-3512	R2467*
B	■10	350							
C	▲10	450							
C2A	▬100	450	67D15-136	AFH2-64-25	B0483 BR1045	FP247 TC72	TMS-61 TD-50-450	S-285 MT-4550	R2468 *
B	▲50	450							
C3	4	150	67A4-2	PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1303
C4A	▬20	450	67D15-138	AFH4-75		FP345.3 TC70		Q-380 MT-4504	R2469 *
B	20	25							
C	■50	350							
D	▲5	450							
C5	4	50	67A4-9	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1303
C6	4	150	67A4-2	PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1303

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	120		94D131-79	NPO-SI 120	D6-121	L10T12	ED-120		5TCC-T12	10%
C8	30		94D131-80							5%
C9	28		94D131-81							10%
C10	12		94D131-95							10%
C11	1000		94D131-82	EF-001	MFT-1000				503C-D1	
C12	1-4.5		94D131-83		829-6		532-B			
C13	5		94D131-84							N900
C14	1000		94D131-85	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C15	1000		94D131-82	EF-001	MFT-1000				503C-D1	
C16	1-4.5		94D131-83		829-6		532-B			
C17	1000		94D131-82	EF-001	MFT-1000				503C-D1	
C18	1000		94D131-82	EF-001	MFT-1000				503C-D1	
C19	1-4.5		94D131-83		829-6		532-B			
C20	47		94D131-87							10%
C21	30		94D131-88							20%
C22	1000		94D131-89							N750
C23	1000		94D131-90	EF-001	MFT-1000				503C-D1	
C24	2.0		94D131-93							5% N550
C25	6.8		94D131-92							10% N330
C26	3.0		94D131-91							10% NPO
C27	1000		94D131-82	EF-001	MFT-1000				503C-D1	
C28	24		65D6-112		TCZ-24	CTA6Q24C	TCO-24			5% NPO
C29	10		65D6-115	NPO-SI 10	TCZ-10	CTA6Q1C	TCO-10	ZT-541	5TCC-Q1	5% NPO
C30	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C31	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C32	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C33	20000		65D10-28	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C34	1.0	100	64A10-3	P288N-1.0		CUB2W1		GEM-21	2TM-M1	
C35	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C36	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C37	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C38	5000		65D10-5	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C39	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C40	5000		65D10-5	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C41	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C42	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C43	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C44	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C45	5000		65D10-5	BPD-005	DD-502	BYB10D5	ED-005	DC525	5HK-D5	
C46	100		65D6-19	N750-SI 100	TCN-100	CTA6T1U	TC7-100	NT-531	5TCU-T1	10% N750
C47	82		65D10-98		TCZ-82	C10Q82C	TCO-82			5% NPO
C48	4.7		65D10-101	NPO-SI 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	5% NPO
C49	6.8		65D10-102	NPO-SI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	5% NPO
C50	150		65B20-151	1469-00015		22R5T15			MS-315	5%
C51	.0015	600	64B8-18	BPD-0015	D6-152	CUB6D15	GP-1500	GEM-6215	6TM-D15	
C52	10000		65D10-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C53	6.8		65D6-82	NPO-SI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	10%
C54	3.3		65D6-89	NPO-SI 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	5TCCB-V33	5% NPO
C55	2200		65D10-89	BPD-0022	DD-222	BYA10D22	ED-0022	UC-5222	5GA-D22	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C56	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C57	2200		85C40-59	BPD-0022	DD-222	BYA30D22	ED-0022	UC-5222	5GA-D22	
C58	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C59	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C60	180		85C30-52							5% N030
C61	20000		85C20-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C62	20000		85C20-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C63	47		85C10-80	BPD-0000047	DD-470	UJ0Q47	ED-47		5GA-Q47	
C64	.033	400	84D18-39	BPD-33	DF-333	CUB5333		GEM-8133	5TM-D33	
C65	.047	400	84H9-28	BPD-05	DF-503	CUB4547		GEM-6147	5TM-S47	
C66	.0047	600	84H8-15	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-6247	5TM-D47	
C67	.001	1800	84H2-28							10%
C68	1.0	100	84A10-3	P288N-1	0	CUB2W1		GEM-31	2TM-M1	
C69	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C70	22	600	84H8-5	P588N-22		CUB5P22		GEM-8022	5TM-P22	
C71	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C72	1000		84H8-19	BPD-001	DD-102	BYA01K	ED-001	DC525	5HK-05	
C73	.0047	600	84H8-15	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-6247	5TM-D47	
C74	.0047	600	84H8-15	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-6247	5TM-D47	
C75	.033	600	84B23-10					GEM-6247	5TM-D47	10%
C76	.33	200	84B23-26					GEM-3033		10%
C77	.056	600	84B23-44							10%
C78	.0027	1800	84B2-37							10%
C79	12	600	84B23-43							10%
C80	.0015	600	84B8-18	BPD-0015	DD-152	CUB5D15	GP-1500	GEM-6215	5TM-D15	
C81	.001	400	84B2-24							10%
C82	.001	600	84B8-24							10%
C83	.0047	600	84B8-18	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-6247	5TM-D47	
C84	.001	600	84B8-24	BPD-001	DD-102	CUB5D	GP-1000	GEM-6211	5TM-D1	
C85	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C86	.047	300	84H8-41	BPD-05	DF-503	CUB2S47		GEM-6147	2TM-S47	
C87	22		85B21-220	1484-00002	DE-220	12R5Q22			MS-422	10%
C88	3900		85B21-392	1454-0039		1R5C39			MS-239	10%
C89	1	600	84H8-7	P688N-1	DF-104	CUB6P1		GEM-601	5TM-P1	
C90	220		85B20-221	1459-00022		1S5T22			MS-322	5%
C91	1	200	84H8-39	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C92	18	600	84H8-37	1484-00047		S8R7-47			5TM-S47	5%
C93	.01	600	84H8-13	BPD-01	DD-103	CUB6S1	GP-10000	GEM-611	5TM-S1	
C94	1	600	84H8-7	P688N-1	DF-104	CUB6P1		GEM-601	5TM-P1	
C95	.22	600	84H8-3	P648N-22		CUB6P22		GEM-6022	5TM-P22	
C96	250	3000	85C180-114							5% N1500
C97	250	3000	85C180-114							5% N1500
C98	82	4000	85C90-98							5% N90
C99	47	200	84B22-35					GEM-2047		10%
C100	47	300	84B22-35					GEM-3047		10%
C101	1	600	84H8-7	P688N-1	DF-104	CUB6P1		GEM-601	5TM-P1	
C102	18	600	84H8-25	P488N-15		CUB6P15		GEM-6015	5TM-P15	
C103	56	5000	85C10-125							N1500
C104	.0033	600	84C25-17	BPD-0033	DD-332	CUB6D33	GP-3300	GEM-6233	5TM-D33	
C105	.047	600	84H8-9	BPD-05	DF-503	CUB6S47		GEM-6147	5TM-S47	
C106	1	600	84H8-7	P688N-1	DF-104	CUB6P1		GEM-601	5TM-P1	
C107	1	600	84H8-7	P688N-1	DF-104	CUB6P1		GEM-601	5TM-P1	
C108	470		85C80-70	1H470	DE-471	LT6T47	GP-470	UC-5347	5GA-T47	10%
C109	.001	400	84A2-34							
C110	.0047	600	84H8-15	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-6247	5TM-D47	
C111	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C112	100			BPD-0001	DD-101	UJ0T1	ED-100	UC-531	5GA-T1	
C113	83			1458-00083		1FM-462			5TCCB-V8S	
C114	6-8		85D6-82	NPO-81-8	TCZ-6R8	CTA8V8SC	TCC-6-8	ZT-5568		10%
C115	43		85D6-95							5% NPO
C116	10000		85C40-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C117	1200				DD-122	L10D12	ED-0012	UC-5213	5GA-D12	
C118	20000		85D10-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C119	5000		84H8-15	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C120	2400		84H2-242	1464-0024		1R5D24			MS-324	5%
C121	10000		85D10-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C122	5000		85D10-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C123	1.0	100	84A10-3	P288N-1	DF-104	CUB2W1		GEM-31	2TM-M1	
C124	22		85D6-30		TCZ-22					2% NPO
C125	18		85D6-104	SI 18	TCZ-18	L10Q18	ED-18	UC-5418	5GA-Q18	
C126	20000		85D10-28	BPD-03	DD-303	BYB583	ED-02		5HK-S2	
C127	10000		85D10-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C128	10000		85D10-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C129	20000		85D10-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C130	20000		85D10-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C131	5000		85C80-5	BPD-005	DD-502	BYA30D5	ED-005	DC525	5HK-05	
C132	1	200	84H8-39	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C133	2200		85D10-59	BPD-0022	DD-222	BYA30D22	ED-0022	UC-5222	5GA-D22	
C134	3.5-35		86D40-5							
C135	2200		85D10-59	BPD-0022	DD-222	BYA30D22	ED-0022	UC-5222	5GA-D22	
C136	20000		85D10-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C137	2200		85D10-59	BPD-0022	DD-222	BYA30D22	ED-0022	UC-5222	5GA-D22	
C138	10000		85D10-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C139	4700		84H8-15	BPD-0047	DD-472	BYA30D47	ED-0047	UC-5247	5HK-D47	
C140	.22	400	84H8-24	P488N-22		CUB4P22		GEM-4022	4TM-P22	
C141	3.0		85D6-58							10% NPO
C142	220		85B21-221		D6-221					10%
C143	20000		85D10-28	BPD-02	DD-202	BYB562	ED-02		5HK-S2	
C144	.047	400	84H8-38	BPD-05	DF-503	CUB4S47		GEM-6147	4TM-S47	
C145	220		85D20-83	BPD-00022	DD-221	L07Z2	ED-220	UC-5222	5GA-T22	
C146	82		85D20-98		TCZ-82	C10Q82C	TCC-82			5% NPO
C147	22		85D6-30		TCZ-22					2% NPO
C148	18		85D10-104		DD-180	L10Q18	ED-18	UC-5418	5GA-Q18	
C149	20000		85D10-28	BPD-02	DD-203	BYB562	ED-02		5HK-S2	
C150	47		85D6-40		TCZ-47	C10Q47C	TCC-47		5TCC-Q47	5% NPO
C151	10000		85D10-3	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C152	1	600	84H8-7	P688N-1	DF-104	CUB6P1		GEM-601	5TM-P1	
C153	.01	1000	84B2-13	P1088N-01	DD-103	CUB10S1		GEM-1011	10TM-S1	
C154	.01	1000	84B2-13	P1088N-01	DD-103	CUB10S1		GEM-1011	10TM-S1	
C155	.01	1000	84B2-13	P1088N-01	DD-103	CUB10S1		GEM-1011	10TM-S1	
C156	39	200	84B22-43							10%
C157	39	200	84B22-43							10%
C158	47	200	84B22-35					GEM-3047		10%
C159	47	200	84B22-35	P288N-47		CUB2P47		GEM-2047	2TM-P47	
C160	.047	600	84H8-9	BPD-05	DF-503	CUB6S47		GEM-6147	5TM-S47	
C161	.047	600	84H8-9	BPD-05	DF-503	CUB6S47		GEM-6147	5TM-S47	
C162	.047	600	84B2-36	BPD-05	DF-503	CUB6S47		GEM-6147	5TM-S47	

CONTROLS

ITEM No	RATING		REPLACEMENT DATA ADMIRAL PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R1A	500K	½	75B11-31	F1-40			UB1478-8	Brightness
B	Meg			R2-56		★GJ-1063	Not Reg.	Volume-Tap & 500K
C	Switch			KB-1			Not Reg.	
R2A	500Ω	½	75C83-74	B-4	A47-500-S	GJ1-103	U2	Contrast Tap & 75Ω - Note 1
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R3A	500K	½	75C83-73	B-59	A47-500K-S	GJ1-133	U50	Tone
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R4A	25K	½	75C83-72	B-26	A47-25K-S	GJ1-120	U29	Horiz. Hold
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R5A	2.5Meg	½	75C83-80	B-83	A47-2.5Meg -S	GJ1-239	U355	Vert. Hold
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R6A	2000Ω	½	75C83-70	B-6	A47-2000-S	GJ1-110	U6	Color Intensity
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R7	100Ω		75C35-4				UI	Red DC - Tap & 50Ω
R8	100Ω		75C35-4				UI	Green DC - Tap & 50Ω
R9	200Ω		75C35-4				UI	Blue DC - Tap & 50Ω
R10A	2.5Meg		75C35-3	F1-76			UE3002	Vert. Lin.
B	5Meg			R3-83			Not Reg.	Vert. Size
R11A	100Ω	½	75C38-3				UE81	Red Vert. Tilt
B	100Ω						Not Reg.	Red Vert. Amp.
R12A	100Ω	½	75C38-3				UE81	Green Vert. Tilt
B	100Ω						Not Reg.	Green Vert. Amp.
R13A	100Ω	½	75C35-2				UE81	Blue Vert. Tilt
B	100Ω						Not Reg.	Blue Vert. Amp.
R14A	1Meg	½	75C30-50	B-59	A47-1Meg-S	GJ1-137	TA161	Red Screen - Note 2
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R15A	1Meg	½	75B17-19	F1-51			UE103	Green Screen
B	500K			R2-40			Not Reg.	Green Grid
R16A	1Meg	½	75B17-19	F1-51			UE103	Blue Grid
B	500K			R2-40			Not Reg.	Blue Grid
R17A	400	2 (WW)	75C20-49	WW-400	A43-40	WP640	R501	Vert. Centering - Note 3
B	Shaft			Not Reg.	KSB-3	Not Reg.	Not Reg.	
R18A	50K	½	75C30-34	AB-51	A47-50K-S	RU1-123	TA541	Horiz. Drive - Note 4
B	Shaft			AK-1	FKS1/4	TM1-KH	Not Reg.	
R19	200K	½	75B33-1					Focus - Note 5
R20	100Ω	½	75B33-3					Horiz. Centering - Note 6

★ Concentrizit Equivalent K-4 Kit, Base Elements and Shafts Bil-133, P1-122(Panel) B19-137X, R2-212 (Rear) 76-1 (Switch)

Note 1. Alternate part #75C13-74 may be used in some versions.
Note 2. Alternate part #75D20-50 may be used in some versions.
Note 3. Alternate part #75D20-49 may be used in some versions.
Note 4 Alternate part #75D20-34 may be used in some versions.
Note 5 Alternate part #75C33-1 may be used in some versions.
Note 6 Alternate part #75C33-2 may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING OHMS	RATING WATT	ADMIRAL PART No	NOTES
R21	4700Ω		60B8-472	
R22	22000		60B8-223	
R23	1000Ω		60B8-102	
R24	3900Ω		60B8-392	
R25	220K		60B8-224	
R26	15K		60B8-153	
R27	1000Ω		60B8-102	
R28	10K		60B8-103	
R29	6800Ω		60B8-682	
R30	10K		60B8-103	
R31	50000Ω	5	61A17-8	
R32	68000Ω	2	60B20-683	
R33	56000Ω	2	60B20-562	
R34	47K		60B8-473	
R35	2.2Meg	5%	60B7-295	
R36	15Meg		60B8-156	
R37	1.5Meg	5%	60B7-155	
R38	22K	5%	60B7-223	
R39	1000Ω		60B8-102	
R40	10K		60B8-103	
R41	100	5%	60B7-100	
R42	1.5K	5%	60B7-152	
R43	4700Ω	2	60B20-472	
R44	560Ω	5%	60B7-560	
R45	1000Ω		60B8-102	
R46	100	5%	60B7-100	
R47	47000Ω	2	60B20-473	
R48	560Ω	5%	60B7-560	
R49	1000Ω		60B8-102	
R50	82K		60B8-820	
R51	68K	5%	60B7-683	
R52	150	5%	60B7-150	
R53	3900Ω	5%	60B7-392	
R54	4700Ω	2	60B20-472	
R55	470Ω		60B7-470	
R56	2700Ω		60B8-272	
R57	2200Ω		60B8-222	
R58	470Ω		60B8-471	
R59	27K	5%	60B7-273	
R60	47K		60B8-473	
R61	4300Ω	5%	60B7-432	
R62	47Ω		60B8-470	
R63	27K		60B8-273	
R64	3900Ω	2	60B20-392	
R65	2700Ω	2	60B20-272	
R66	47K	2	60B20-473	
R67	22K	1	60B16-223	
R68	220K		60B8-224	
R69	56K		60B8-563	
R70	15K		60B8-153	
R71	10K	2	60B20-103	
R72	120Ω		60B8-121	
R73	390Ω		60B8-391	
R74	120K		60B8-124	
R75	2.2Meg		60B8-225	
R76	100K		60B8-104	
R77	470Ω		60B8-471	
R78	220K		60B8-224	
R79	390K		60B8-394	

ITEM No	RATING OHMS	RATING WATT	ADMIRAL PART No	NOTES
R80	330Ω	1	60B14-331	
R81	2500Ω	1	61B20-6	
R82	2.2Meg		60B8-225	
R83	3.3Meg		60B8-335	
R84	56K		60B8-563	
R85	330K	2	60B8-334	
R86	27K	2	60B20-273	
R87	2.2Meg		60B8-225	
R88	4.7Meg		60B8-475	
R89	2700Ω		60B8-272	
R90	10K		60B8-103	
R91	120K		60B8-124	
R92	2200Ω		60B8-222	
R93	39K		60B8-393	
R94	18K		60B8-183	
R95	15K		60B8-153	
R96	8.5Meg		60B8-885	
R97	1Meg		60B8-105	
R98	2.2Meg		60B8-225	
R99	3.9Meg		60B8-395	
R100	100K		60B8-104	
R101	4.7Meg	1	60B14-575	
R102	100Ω		60B8-101	
R103	470K		60B8-474	
R104	22K	1	60B14-223	
R105	270K		60B8-274	
R106	12000Ω	6%	60B7-122	
R107	1200Ω	5%	60B7-122	
R108	100K	5%	60B7-104	
R109	100K	5%	60B7-104	
R110	470K		60B8-474	
R111	4.7Meg		60B8-475	
R112	2200Ω		60B8-222	
R113	56000Ω		60B8-563	
R114	150K	5%	60B7-154	
R115	10K	5%	60B7-103	
R116	150K		60B8-154	
R117	82000Ω	5%	60B7-823	
R118	20000Ω	5%	60B7-203	
R119	330Ω		60B8-331	
R120	1Meg		60B8-105	
R121	22000Ω	2		
R122	12K	10	61B20-3	
R123	56Ω		60B8-560	
R124	4700Ω	1	60B14-472	
R125	47Ω		60B8-470	
R126	3.3Ω	5%	60B16-10	
R127	10Meg	2	60B20-106	
R128	1Meg	2	60B20-105	
R129	1Meg	2	60B20-105	
R130	10Meg	2	60B20-106	
R131	10Meg	2	60B20-106	
R132	10K		60B8-103	
R133	1.8Meg	5% 1	60B13-185	
R134	1.8Meg	5% 1	60B13-185	
R135	100Meg	1	60B15-107	
R136	5.2Ω	5% 1	60B16-52	
R137	330Ω		60B8-331	
R138	12K		60B8-123	

RESISTORS (cont)

ITEM No	RATING OHMS	RATING WATT	ADMIRAL PART No	NOTES
R139	100K		60B8-104	
R140	470K		60B8-474	
R141	33K	2	60B20-333	
R142	18K	2	60B20-183	
R143	82000Ω		60B8-823	
R144	6800Ω		60B8-682	
R145	1000Ω	5%	60B7-102	
R146	47K		60B8-473	
R147	10000Ω	1	60B6-102	
R148	10K	5%	60B7-103	
R149	10K	5%	60B7-103	
R150	68K	5%	60B7-683	
R151	1300Ω	2	60B20-132	
R152	15000Ω	2	60B20-153	
R153	10K	1	60B14-103	
R154	1000Ω		60B8-102	
R155	33000Ω	10	60B20-8	
R156	470K		60B8-474	
R157	27K	2	60B20-273	
R158	680K		60B8-684	
R159	10K	5%	60B7-103	
R160	4700Ω	1	60B14-472	
R161	15K	2	60B20-153	
R162	470Ω		60B8-471	
R163	2700Ω		60B8-272	
R164	680Ω	1	60B14-681	
R165	18K	2	60B20-183	
R166	22K	3	60B20-223	
R167	100K		60B8-104	
R168	2700Ω		60B8-272	
R169	3300Ω	2	60B20-332	
R170	100K		60B8-104	
R171	2700Ω		60B8-272	
R172	82Ω		60B8-820	
R173	2000Ω		60B8-202	
R174	27K	5%	60B7-273	
R175	1000Ω		60B8-102	
R176	470Ω		60B8-471	
R177	4700Ω	1	60B14-472	

ITEM No	RATING OHMS	RATING WATT	ADMIRAL PART No	NOTES
R178	12Meg		60B8-126	
R179	10Meg		60B8-106	
R180	1Meg	5%	60B7-105	
R181	56K		60B8-563	
R182	1Meg		60B8-105	
R183	22K		60B8-223	
R184	1Meg	5%	60B7-105	
R185	100Ω		60B8-101	
R186	2200Ω		60B8-222	
R187	150K		60B8-154	
R188	390K		60B8-394	
R189	100K		60B8-104	
R190	3300Ω	3	60B20-332	
R191	33K		60B8-333	
R192	2700Ω		60B8-272	
R193	18K	2	60B20-183	
R194	100K		60B8-104	
R195	2700Ω		60B8-272	
R196	330K		60B8-334	
R197	100K		60B8-104	
R198	83K		60B8-833	
R199	56K		60B8-563	
R200	83K		60B8-833	
R201	180K		60B8-184	
R202	100K		60B8-104	
R203	100K		60B8-104	
R204	100K		60B8-104	
R205	330K		60B8-334	
R206	560K		60B8-564	
R207	33Ω	2	60B20-330	
R208	33Ω	2	60B20-330	
R209	33K	2	60B20-220	
R210	68Ω		60B8-680	
R211	2500Ω	7	61B20-6	
R212	800Ω	10	61B20-7	
R213	430Ω	20	61A1-42	
R214	100K		60B8-104	
R215	470K		60B8-474	

TRANSFORMER (POWER)

ITEM No	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	ADMIRAL PART No	REPLACEMENT DATA Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T1	117V @3.5A	680VCT @ 400A	5V @ 6A	6.3V @12.2A SEC 4 6.3V @ 2.2A	80C52-1 1						

1 Alternate part #80C57-1 used in Chassis stamped Run 18 and higher.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	ADMIRAL PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T2	Vert. Output	79CT2-1							
T3A B	Yoke-Horiz. (L.-8MH) (.17-1MH)	94U232-1							
T4	Horiz. Output	79D69-2							
T5	Horiz. Tuning Coil (.17-1MH)	94B14-3							
T6	Green Horiz. Conv. Amp. Coil (.3-1.8MH)	94B133-2	RF803	MWC-10 1	206R1	WC-7	WC-23 2	WLC-8A	
T7	Blue Horiz. Conv. Amp. Coil (.3-1.8MH)	94B133-2	RF803	MWC-10 1	206R1	WC-7	WC-23 2	WLC-8A	
T8	Red Horiz. Conv. Amp. Coil (.3-1.8MH)	94B133-2	RF803	MWC-10 1	206R1	WC-7	WC-23 2	WLC-8A	
T9	Green Horiz. Conv.	94B133-1	RF801	MWC-8	20LR4	WC-4	WC-15	WLC-4	
T10	Blue Horiz. Conv.	94B133-1	RF801	MWC-8	20LR4	WC-4	WC-15	WLC-4	
T11	Red Horiz. Conv. T11 Coil (.13-.4MH)	94B133-1	RF801	MWC-8	20LR4	WC-4	WC-15	WLC-4	
T12	Conv. Tube Assembly	94B134-1							

1 Use red and blue terminals.
2 Enlarge mounting hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	ADMIRAL PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T13	4800Ω	5-8Ω	78B66-7 1	ZJ109	A-2902 2	A-3870 2	22S58	S-55X	1 Alternate part #70B66-9 Used in Ch. 292LB, 292LDB 2 Drill one new mounting hole. 3 Tap center tap on primary.

SPEAKER

ITEM No	TYPE SIZE	FIELD	V. C. IMP	ADMIRAL PART No	JUAN PART No	NOTES
SP1	6" x 9"	PM	3-4Ω	78C107-5 1 2 3	69A2 1	1 Connect in series and phase.
SP2	6" x 9"	PM	3-4Ω	78C107-4 1 2	68A2 1	2 Used in Models C322C26, 27, C3222C26, 27
	8"	PM		78D118-4 4		3 Includes T13
	8"	PM		78D118-6 5		4 Used in Models C322C2, 3, C3222C, 3
	8"	PM		78D118-5 5 6		5 Used in Models C322C16, 17, C3222C16, 17
	8"	PM		78D137-3 5		6 Used in Models LC322C26, 27, LC3222C26, 27, LC322C29, LC3222C29
	8"	PM		78D137-1 5 7		7 Includes leads.
	8"	PM		78B91-4 5 7		8 Includes lugs.
	5¼"	PM		78B91-5 5 8		

ADMIRAL MODELS C322C2, 3, 16, 17, 26, 27, C3222C16, 17, 26, 27, LC322C2, 3, 16, 17, 26, 27, LC3222C16, 17, 26, 27, LC322C36, 37, 39 (Ch. 29AZ1, 29521, B, 292LB, B)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L1	Ant. Trans.	94D131-68	Complete Assy.
L2	IF Trap	94D131-64	
L3	IF Trap	94D131-51	
L4A	Ant., RF, Mixer Grid & Osc. Coils	94D131-52	Channel 2
B	"	94D131-53	Channel 3
C	"	94D131-54	Channel 4
D	"	94D131-55	Channel 5
E	"	94D131-56	Channel 6
F	"	94D131-57	Channel 7
L4G	Ant., RF, Mixer Grid & Osc. Coils	94D131-58	Channel 8
H	"	94D131-59	Channel 9
I	"	94D131-60	Channel 10
J	"	94D131-61	Channel 11
K	"	94D131-62	Channel 12
L	"	94D131-63	Channel 13
L5	Mixer Screen Coil	94D131-65	
L6	RF Choke	94D131-67	
L7	Mixer Plate Coil	94D131-66	

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L8	1st. Video IF	72D161-1				
L9A	41.25MC Trap	72B164-1				
B	47.25MC Trap					
L10	Fil. Choke	73A2-5	19-3001	TV-189	6175	.6 Microhenry
L11	2nd. Video IF	72D111-40	17-4523	TV-130	6219	
L12	Fil. Choke	73A2-5	19-3001	TV-189	6175	.6 Microhenry
L13	3rd. Video IF	72B154-1				
L14	Fil. Choke	73A2-5	19-3001	TV-189	6175	.6 Microhenry
L15	4th. Video IF	72D111-39	17-4522	TV-130	6219	
L16	RF Choke	73B24-3	19-6022	TV-192	6152	20 Microhenries
L17	RF Choke	73B24-3	19-6022	TV-192	6152	20 Microhenries
L18	41.25MC Trap	72B166-1				
L19	5th. Video IF	72B159				Includes Det. Assy.
L20	Resonant Choke	73B24-1				43.5MC, 7.7 Microhenries
L21	Series Peaking	73B25-5	19-4400 *	TV-190 *	6134 *	380 Microhenries, wound on 6800Ω resistor
L22	Series Peaking Coil	73B5-31	19-3125	TV-195	6153	130 Microhenries
L23	3.58MC Trap	72D165-5				
L24	Shunt Peaking Coil		19-3300	TV-185	6130	280 Microhenries
L25	Series Peaking Coil	73B5-27	19-3125	TV-195	6112	113 Microhenries
L26	Video Amp. Plate Coil	72B167-1				
L27	Shunt Peaking Coil	73B25-7		TV-207 ▲	6156 ▲	850 Microhenries, wound on 10K resistor
L28	Series Peaking Coil	73B5-27			6112	113 Microhenries
L29	Sound IF	72B157-1				
L30	Ratio Det.	72C68-2	17-1033 ♦	TV-110 ♦	1468 ♦	
L31	4.5MC Trap	72D165-2		TV-119	1470	
L32	Chroma Grid Coil	72D165-7				
L33	Resonant Choke	73B24-6		TV-205		6MC, 625 Microhenries
L34	Chroma Plate Trans.	72B155-1				
L35	Chroma Plate Coil	72B163-1				
L36	Resonant Choke	73B24-5				3.58MC, 1205 Microhenries
L37	Burst Amp. Plate Coil	72B181-1				
L38	Series Peaking Coil		19-3036	TV-180	6176	39 Microhenries
L39	Chroma Ref. Osc. Control Plate Coil	72B156-1				
L40	Demodulator Driver Trans.	72B178-1				
L41	Phase Shift Coil	72B158-1				
L42	Resonant Choke	73B24-5				3.58MC, 1205 Microhenries
L43	Resonant Choke	73B24-5				3.58MC, 1205 Microhenries
L44	RF Choke	73B33-1	19-1005	BC-566	4622	12 Microhenries
L45	RF Choke	73B33-1	19-1005	BC-566	4622	12 Microhenries

♦ Remove C-60 shunting secondary winding.
* Parallel with 6800Ω resistor.
▲ Parallel with 10K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L46	44Ω		94C17-12	19-1576	TV-163	6210	H-102	HS-5	24.5 - 50 Millihenries

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L47	.460A	17Ω	.6 HY.	74B18-20					C-40X

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA
K1	Sound Couplate	390MMF, 2200MMF, 5000 MMF, 47K, 10K, 10K	63C 6-15	Centralab PC-304
K2	Sync Couplate	150MMF, 10000MMF, 270K	63C 6-8	Centralab PC-184 Sprague 101C11

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ADMIRAL PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1		93A5-2 ①	1215 ①②		1T1 ①②		① Selenium Type ② 2 Required

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ADMIRAL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3/4" No. 27 Wire							
M3	3/4" No. 27 Wire							
M4	C	2A 250V	84A13-14	84A12-6	332002. (C2A250V)	364006	C2	HC 1 3/4 to 2 1/2
M5	C	3/4A 250V	84A13-9	84A12-2	332.750 (C 3/4A 250V)	346003	C 3/4	HC 1/2 to 3/4
M6	C	3/10A 250V	84A13-6	84A12-4	332.300 (C 3/10A 250V)	346001	C 3/10	HC 0 to 3/10

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ADMIRAL PART No.	CBS PART No.	SYLVANIA PART No.	
M7	1N60	93A8	1N60	1N60	Video Detector (Pigtail)
M8	1N295	93A8	1N60	1N60	Sound & Chroma Detector (Pigtail)

PROPERTY OF

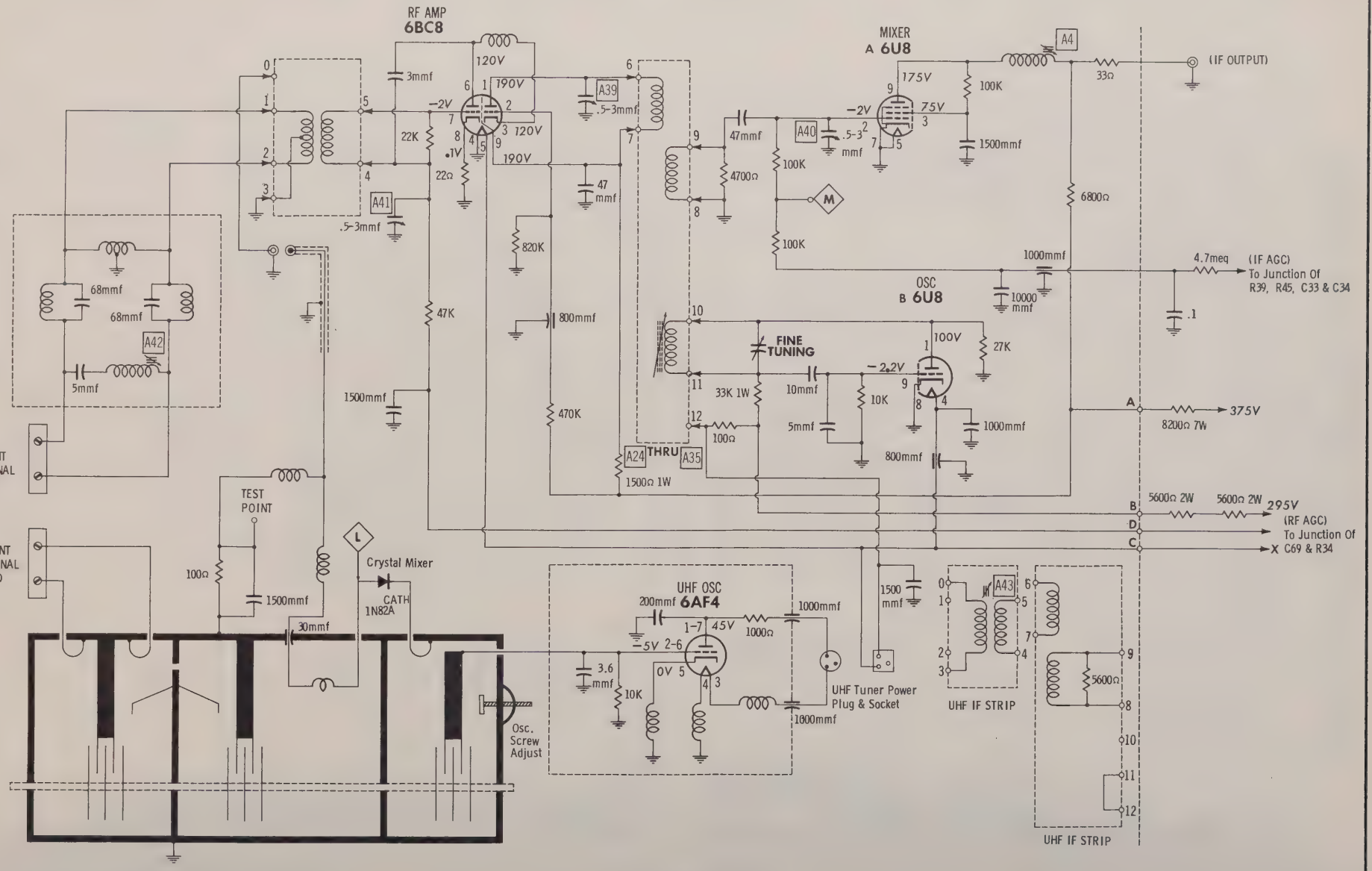
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M9	Crystal	93B3-4	3.579545MC Oscillator (Plug-in)
	Crystal	93B3-3	3.579545MC Oscillator (Pigtail)
M10	Pilot Light	81A1-12	Type #47 - Not used in Table Models
M11	Tuner	94D131-2	VHF - Used in Chassis stamped Run 17 or higher
	Tuner	94D131-1	VHF - Used in Chassis stamped Run 1 thru Run 16
	Tuner	94D107-1	UHF/VHF - Used in Chassis stamped Run 1 thru Run 17
	Tuner	94E107-1	UHF/VHF - Used in Chassis stamped Run 18 or higher
	Tuner	94E144-8	VHF - Used in Chassis 29AZ1, Run 21
	Tuner	94D112-3	UHF - Used in Chassis 29AZ1, Run 21
M12	Delay Line	72B168-1	
M13	Magnet	94A104	Purity
M14	Magnet	94A136	Blue Beam Lateral
M15	Magnet	94B135	Rim (6 used)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

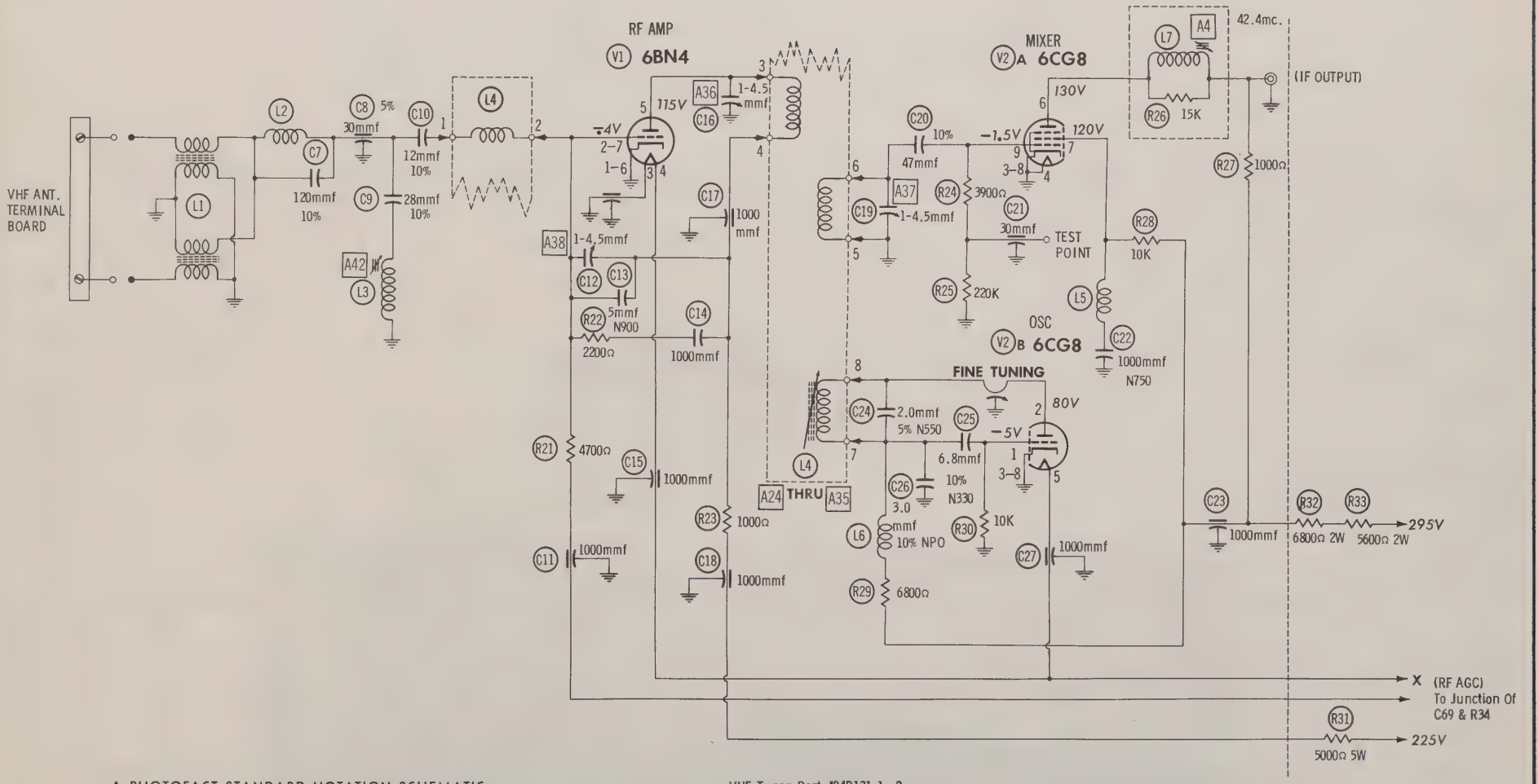
NAME	PART NO.	DESCRIPTION
Safety Glass	21C86-2	
Mask	23E237-3	Models C322C26, CS322C26
Mask	23E237-7	Models C322C2, CS322C2
Mask	23E237-8	Models C322C3, CS322C3
Mask	23E237-5	Models C322C16, CS322C16, LC322C36, LCS322C36
Mask	23E237-6	Models C322C17, CS322C17, LC322C37, 39, LCS322C37, 39
Mask	23E237-4	Models C322C27, CS322C27
Knob	33D199-22	VHF Channel Selector - Models C322C16, 26, CS322C16, 26, LC322C36, LCS322C36
Knob	33D199-16	VHF Channel Selector - Models C322C2, CS322C2
Knob	33D199-1	VHF Channel Selector - Models C322C3, CS322C3
Knob	33D199-10	VHF Channel Selector - Models C322C17, 27, CS322C17, 27, LC322C37, 39, LCS322C37, 39
Knob	33D199-24	UHF/VHF Channel Selector - Models C322C16, 26, CS322C16, 26, LC322C36, LCS322C36
Knob	33D199-18	UHF/VHF Channel Selector - Models C322C2, CS322C2
Knob	33D199-3	UHF/VHF Channel Selector - Models C322C3, CS322C3
Knob	33D199-12	UHF/VHF Channel Selector - Models C322C17, 27, CS322C17, 27, LC322C37, 39, LCS322C37, 39
Knob	33D165-138	Vernier - All VHF Models
Knob	A5332	Spin Tuning - All UHF/VHF Models)
Knob	33D199-9	UHF Channel Indicator
Knob	33D199-23	On-off-volume - Models C322C16, 26, CS322C16, 26, LC322C36, LC322C36
Knob	33D199-17	On-off-volume - Models C322C2, CS322C2
Knob	33D199-2	On-off-volume - Models C322C3, CS322C3
Knob	33D199-11	On-off-volume - Models C322C17, 27, CS322C17, 27, LC322C37, 39, LCS322C37, 39
Knob	33D165-139	Contrast
Knob	33C81-19	Bass & Treble - Models LC322C36, 37, 39, LCS322C36, 37, 39
Cabinet	35E386-1	Models C322C26, CS322C26
Cabinet	35E384-3	Models C322C2, CS322C2
Cabinet	35E384-1	Models C322C16, CS322C16
Cabinet	35E388-1	Models LC322C36, LCS322C36
Cabinet	35E384-4	Models C322C3, CS322C3
Cabinet	35E384-2	Models C322C17, CS322C17
Cabinet	35E386-2	Models C322C27, CS322C27
Cabinet	35E388-2	Models LC322C37, LCS322C37
Cabinet	35E388-3	Models LC322C39, LCS322C39



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF-VHF Tuner Part #94E107-1

ALTERNATE TUNER SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

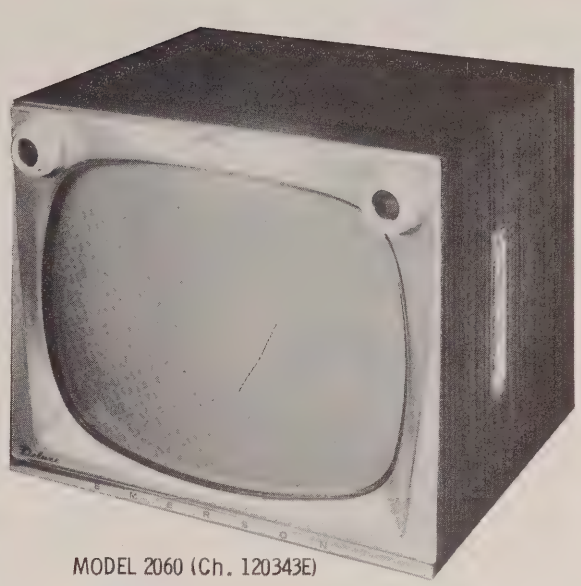
VHF Tuner Part #94D131-1, -2.

TUNER SCHEMATIC

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs and front mask.
2. Remove hex nut holding volume and contrast control.
3. Remove 2 metal screws holding control panel on side.
4. Remove 7 metal screws and the rear cover.
5. Remove picture tube socket, ion trap, width sleeve, yoke clamp and HV lead.
6. Remove 2 metal screws holding antenna terminal board.
7. Remove 2 metal screws from the bottom holding power supply.
8. Remove 2 metal screws holding tuner bracket.
9. Remove 2 metal screws from top chassis support braces.
10. Remove 2 metal screws from chassis bottom.
11. Remove chassis.
12. Unsolder 2 speaker leads.
13. Remove 2 hex nuts and remove speaker.



MODEL 2060 (Ch. 120343E)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

TRADE NAME	EMERSON	MODELS	CHASSIS
		2056, 2058, 2060, 2062	120343-E
		2057, 2059, 2061, 2063	120344-G
		2034S, 2038S	120345-E, -V
		2040S, 2042S	120346-V
MANUFACTURER	Emerson Radio & Phonograph Corp., 14th & Coles St., Jersey City 2, N.J.		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING (150 Watts)	1.4 Amp. @ 117VAC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 push-on type knobs.
Pull mask up and out.
Remove side glass retaining brackets.
Loosen the top and bottom retaining brackets and gently remove safety glass.

PICTURE TUBE REMOVAL

Remove chassis as given in "Chassis Removal".
Remove 4 metal screws holding picture tube frame.
Remove picture tube through rear of cabinet.

FOCUS

Adjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and adjust the horizontal frequency slug (V1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the discriminator secondary (A9) located on top of chassis.

FUSE

A fuse is used for the LV power supply protection. (See tube placement chart for location).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

EMERSON MODELS 2034S, 38S, 40S, 42S, 2056, 57, 58, 59, 60, 61, 62, 63 (Ch. 120343E, 120344G, 120345E, V, 120346V)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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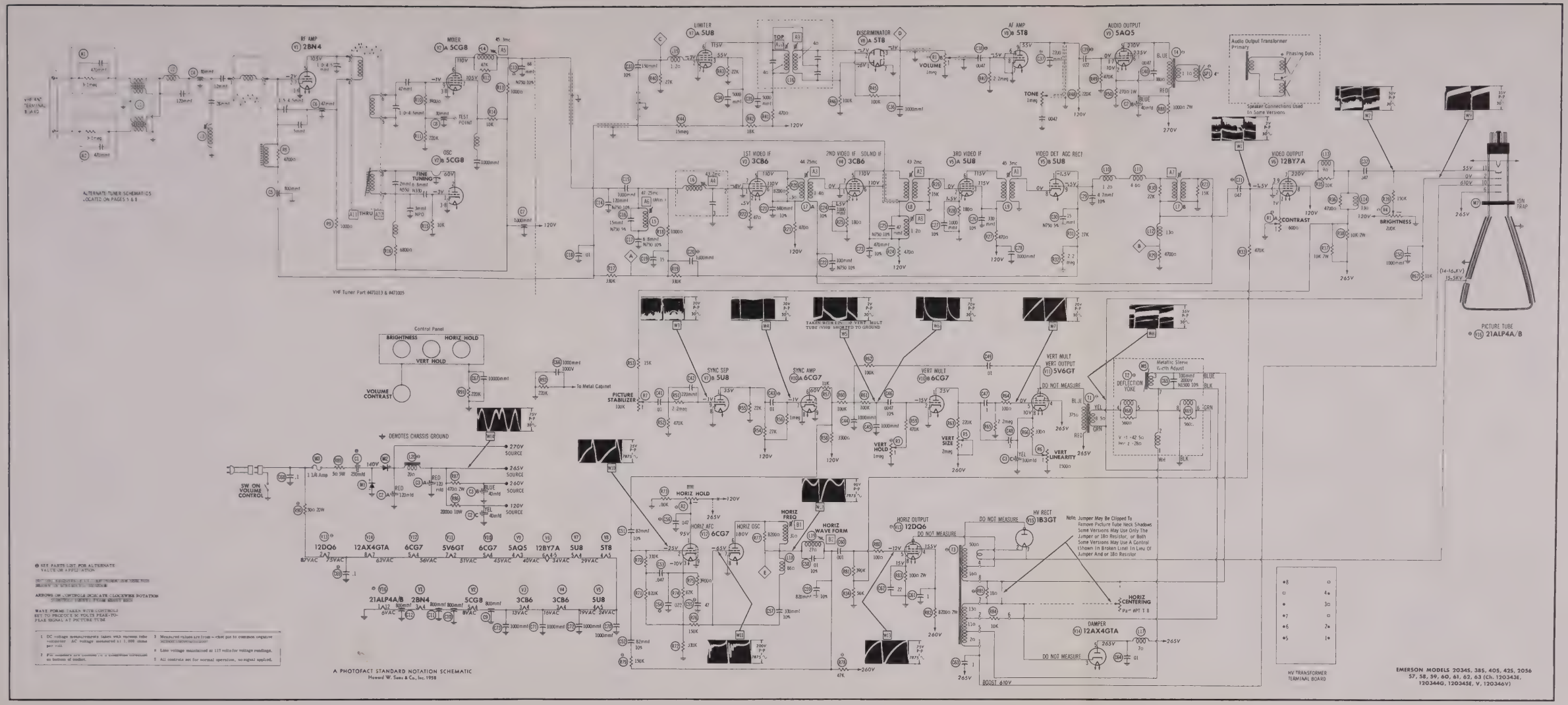
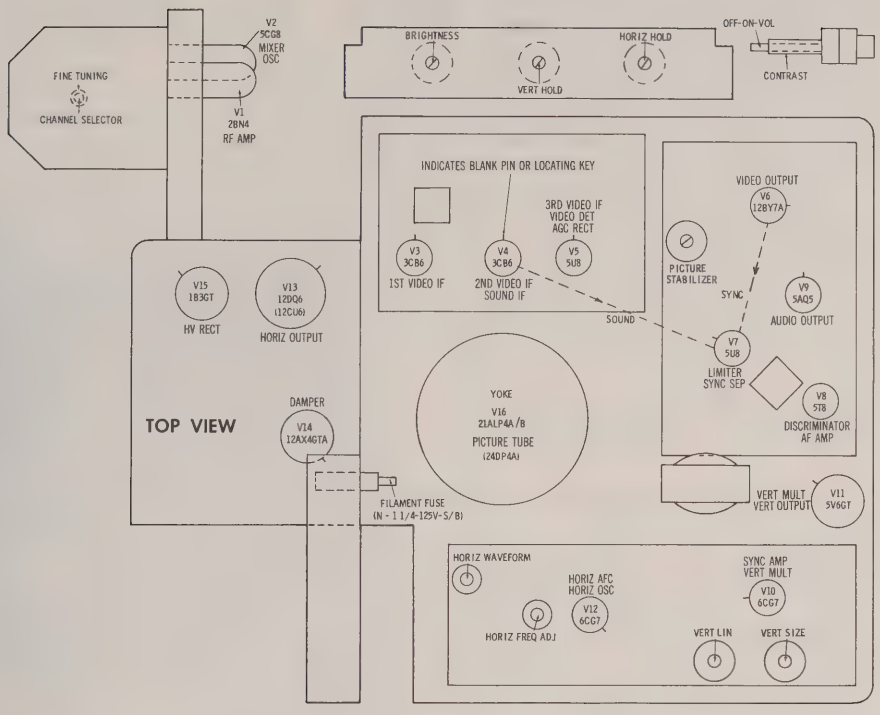

RF AMP V1 2BN4
MIXER V2 A 5CG8
OSC V2 B 5CG8
LIMITER V7 A 5U8
DISCRIMINATOR V8 A 5T8
AF AMP V8 B 5T8
AUDIO OUTPUT V9 5AQ5
1ST VIDEO IF V2 3CB6
2ND VIDEO IF SOUND IF V4 3CB6
3RD VIDEO IF V5 A 5U8
VIDEO DET AGC RECT V5 B 5U8
VIDEO OUTPUT V6 12BY7A
SYNC SEP V7 B 5U8
SYNC AMP V10 A 6CG7
VERT MULT V10 B 6CG7
VERT MULT VERT OUTPUT V11 5V6GT
HORIZ HOLD
HORIZ AFC V12 6CG7
HORIZ OSC
HORIZ FREQ
HORIZ WAVE FORM
HORIZ OUTPUT V13 12DQ6
HV RECT V15 1B3GT
DAMPER V14 12AX4GTA
PICTURE TUBE V16 21ALP4A/B
Control Panel
BRIGHTNESS
HORIZ HOLD
VERT HOLD
VOLUME CONTROL
CONTRAST
PICTURE STABILIZER
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
270V SOURCE
265V SOURCE
260V SOURCE
120V SOURCE
DEFLECTION YOKE
HORIZ CENTERING
BOOST 610V
ION TRAP
HV TRANSFORMER TERMINAL BOARD
Audio Output Transformer Primary
Phasing Dots
Speaker Connections Used In Some Versions
Note: Jumper May Be Clipped To Remove Picture Tube Neck Shadows. Some Versions May Use Only The Jumper or 180 Resistor, or Both. Some Versions May Use A Control (Shown In Broken Line) In Lieu Of Jumper And or 180 Resistor
DO NOT MEASURE
ALTERNATE TUNER SCHEMATICS LOCATED ON PAGES 5 & 8
VHF Tuner Part 8473013 & 8473025
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
EMERSON MODELS 20345, 385, 405, 425, 2056 57, 58, 59, 60, 61, 62, 63 (Ch. 120343E, 120344G, 120345E, V, 120346V)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

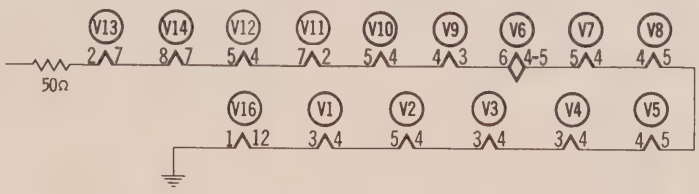
POWER SUPPLY FAILURE
No raster, no sound - **Fuse (M3), Surge Resistor (R89), Rectifier (M1, M2)**

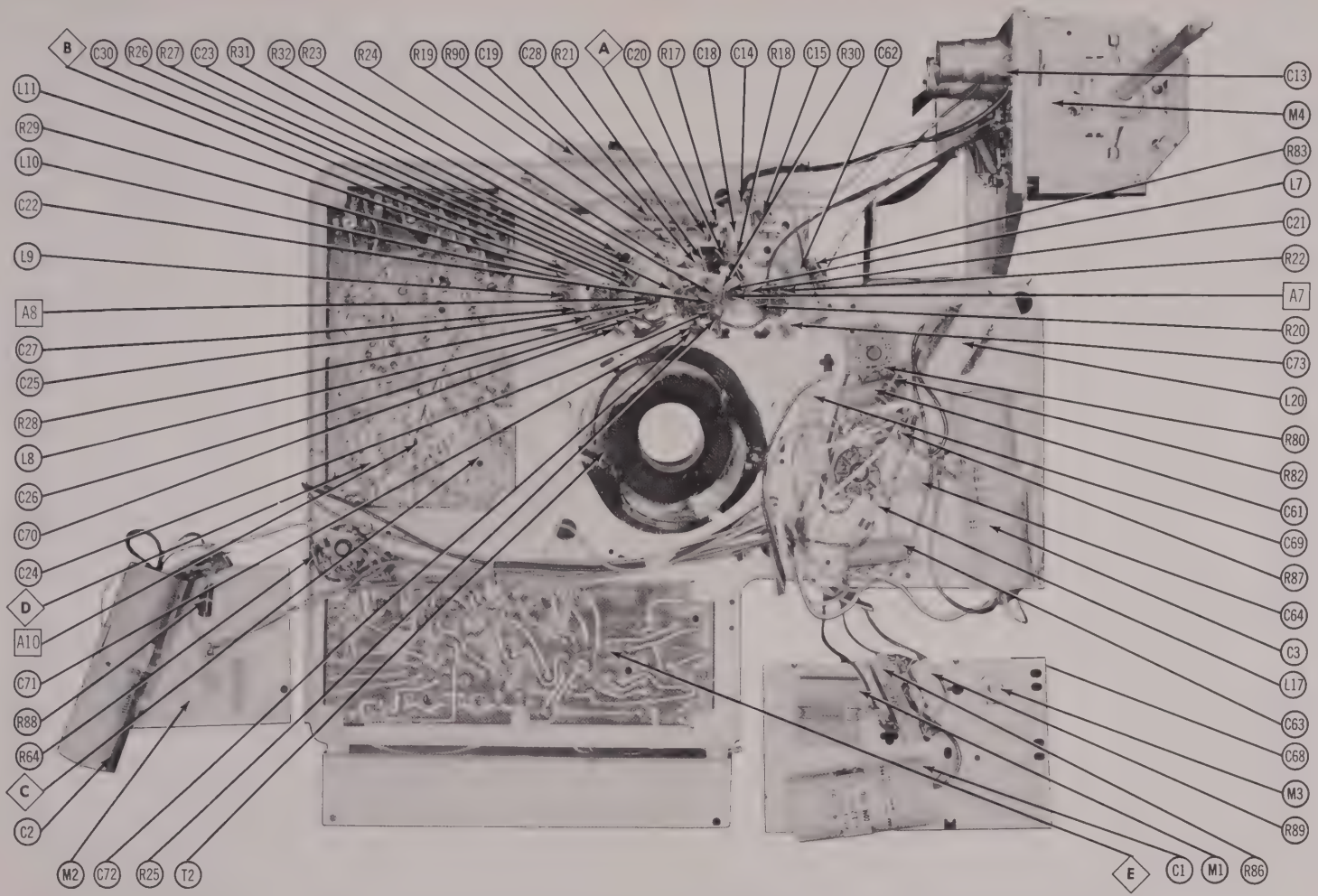
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V16**
Has pic, no sound - **V7, V8, V9**
Overloaded picture - **V5, V6**

SYNC FAILURE
No vert. sync - **V10, V11**
No horiz. sync - **V10, V12**
No vert. or horiz. sync - **V7, V10**

SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V16**
No vertical deflection - **V10, V11**
Poor vert. linearity or foldover - **V10, V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, M1, M2**
Vert. off freq. - **V10**
Horiz. off freq. - **V12**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW

EMERSON MODELS 2034S, 38S, 40S, 42S, 2056, 57, 58, 59, 60, 61, 62, 63
(Ch. 120343E, 120344G, 120345E, V, 120346V)
ALTERNATE TUNER SCHEMATIC
FOLDER 2
PROPERTY OF
DENVER, COLORADO
UHF-VHF Tuner Part #471016
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
IF OUTPUT To Junction Of C14 & C15
AGC To Junction Of R17, R44 & C18
To Pin 12 Of V16
Filament String
To Pin 3 Of V3
120V
MIXER A 5CG8
OSC B 5CG8
RF AMP 2BN4
2BN4
5CG8
UHF OSC 2AF4A
FINE TUNING
THRU
UHF IF STRIP
1N82A
CRYSTAL MIXER
VHF ANT. TERMINAL BOARD
UHF ANT. TERMINAL BOARD

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the mixer-osc. tube (V2) and tube shield. Connect the high side of the sweep generator to the metal strip. Low side to chassis.	Not used	45.3MC (Unmod)	Any non-interfering channel	USE VTVM. DC probe to point Ⓑ. Common to chassis.	A1, A5	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
2.	"	"	"	43.2MC	"	"	A2, A4	"
3.	"	"	"	44.25MC	"	"	A3	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection. Repeat steps 1 thru 3.
4.	"	"	"	47.25MC	"	"	A6	Use high scope gain and adjust A6 for MINIMUM deflection.
5.	"	"	44.0MC (10MC Swp)	41.25MC 44.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.		Use only enough sweep generator output to provide a usable pattern on scope. Check for response similar to Fig. 1. If necessary, SLIGHTLY retouch A1 thru A5 to obtain desired response.

SOUND IF ALIGNMENT

Use negative scale on VTVM.
With antenna loosely connected, tune in a weak station.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	None	Not used	Not used	Any operating channel	DC probe to point Ⓒ. Common to chassis.	A7, A8	Adjust for maximum deflection. Use signal level that produces sharp maximum.
7.	"	"	"	"	DC probe to point Ⓓ. Common to chassis.	A9	Adjust for maximum deflection.
8.	"	"	"	"	"	A10	"
9.	"	"	"	"	"	A9	Readjust A9 for MINIMUM deflection. Repeat if necessary.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis.	A11	Adjust to place sound marker in trap notch as in Fig. 2. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A12	
			201MC	199.25MC 203.75MC	11		A13	
			195MC	193.25MC 197.75MC	10		A14	
			189MC	187.25MC 191.75MC	9		A15	
			183MC	181.25MC 185.75MC	8		A16	
			177MC	175.25MC 179.75MC	7		A17	
			85MC	83.25MC 87.75MC	6		A18	
			79MC	77.25MC 81.75MC	5		A19	
			69MC	67.25MC 71.75MC	4		A20	
			63MC	61.25MC 65.75MC	3		A21	
			57MC	55.25MC 59.75MC	2		A22	

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

ALIGNMENT INSTRUCTIONS (cont)

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

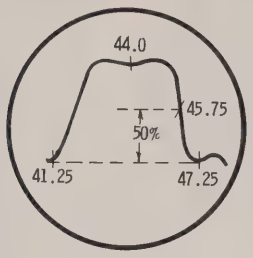


FIG. 1

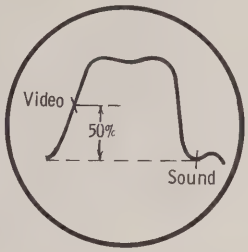
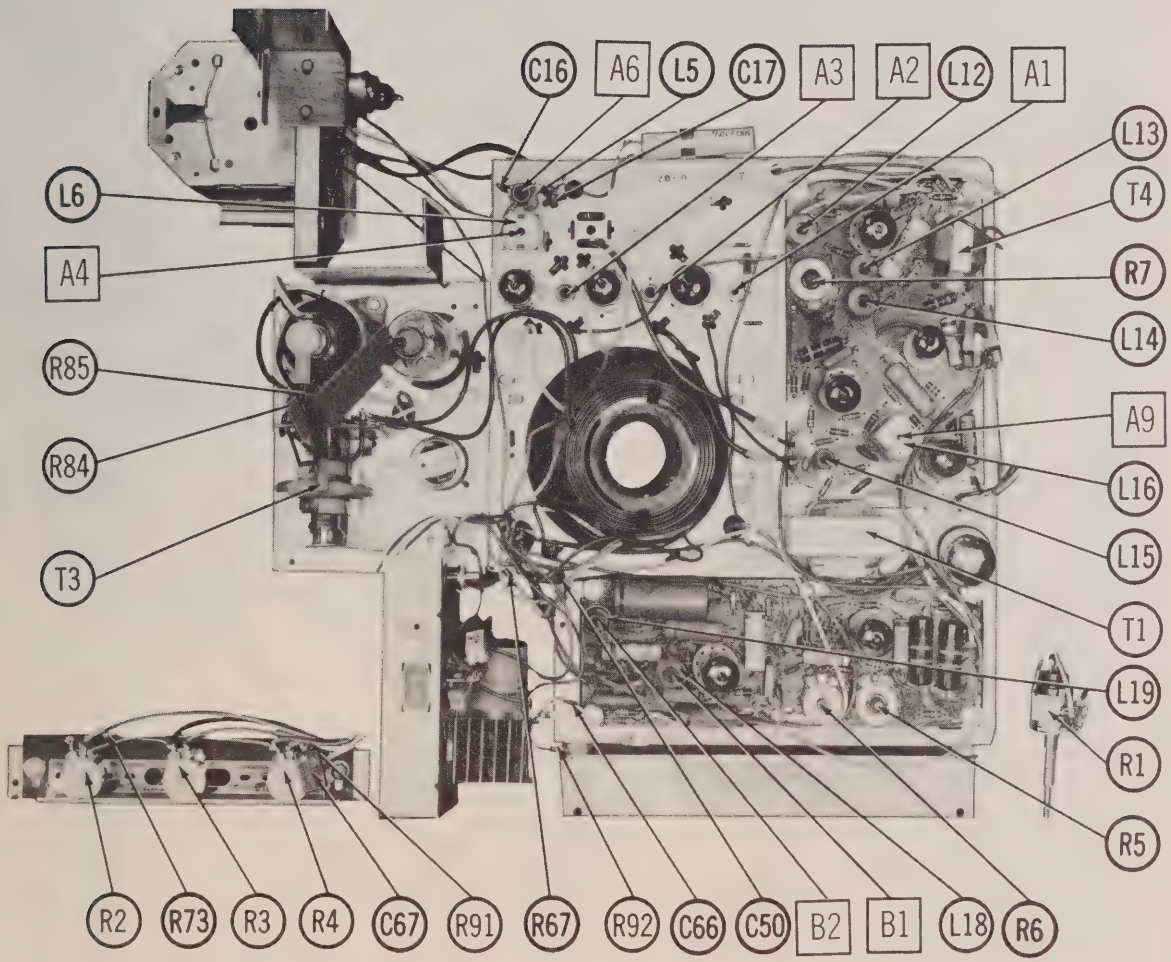


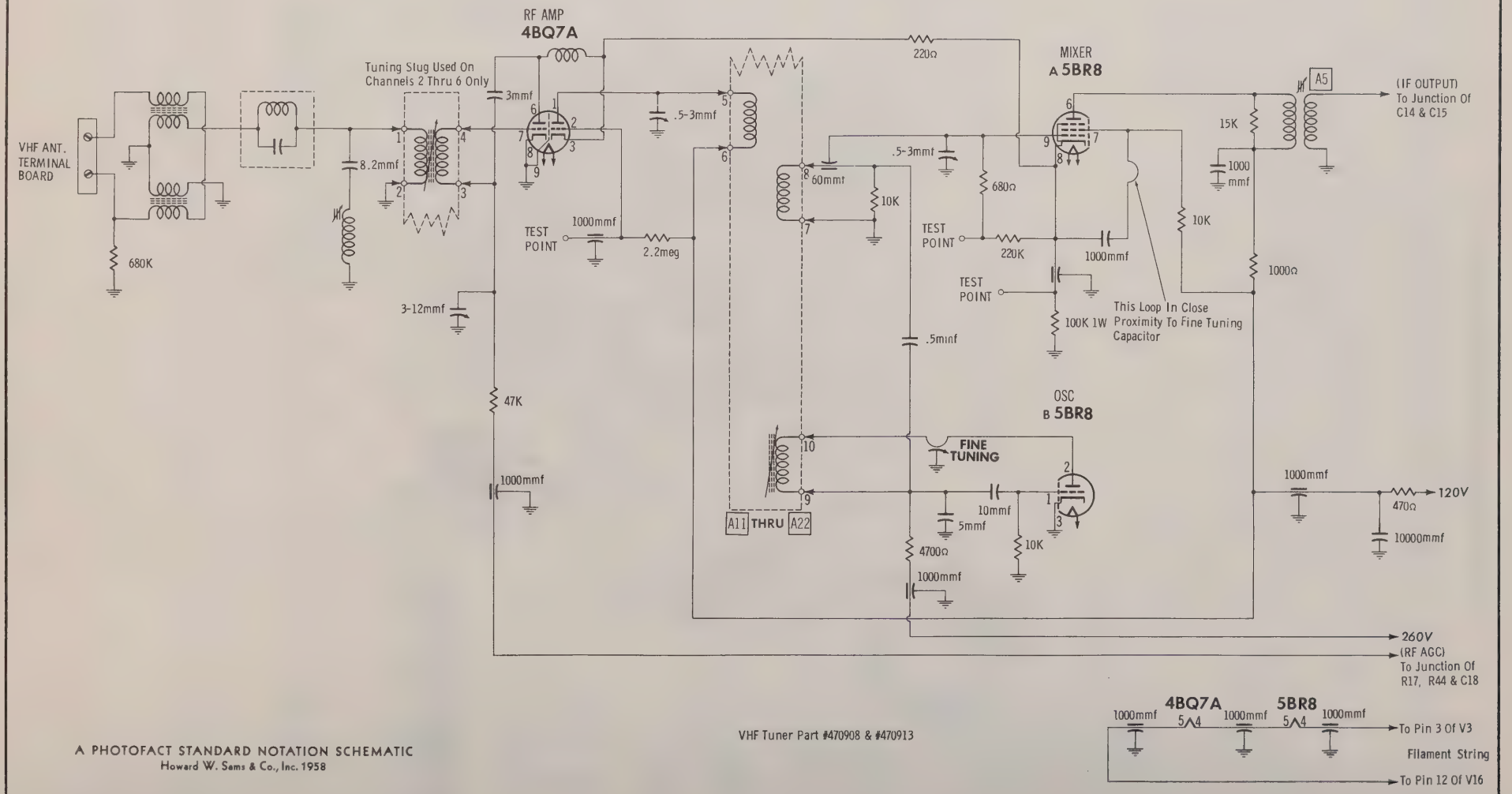
FIG. 2



CHASSIS TOP VIEW

EMERSON MODELS 20345, 385, 405, 425, 2056, 57, 58, 59, 60, 61, 62, 63 (Ch. 120343E, 120344G, 120345E, V, 120346V)

FOLDER 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

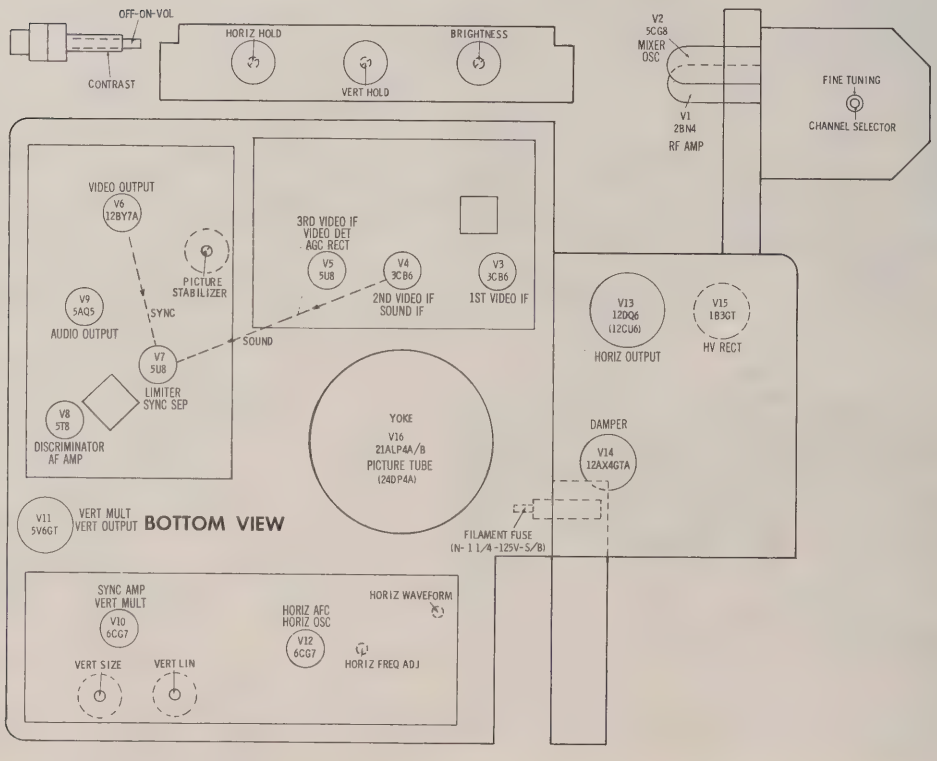
VHF Tuner Part #470908 & #470913

ALTERNATE TUNER SCHEMATIC

RESISTANCE MEASUREMENTS

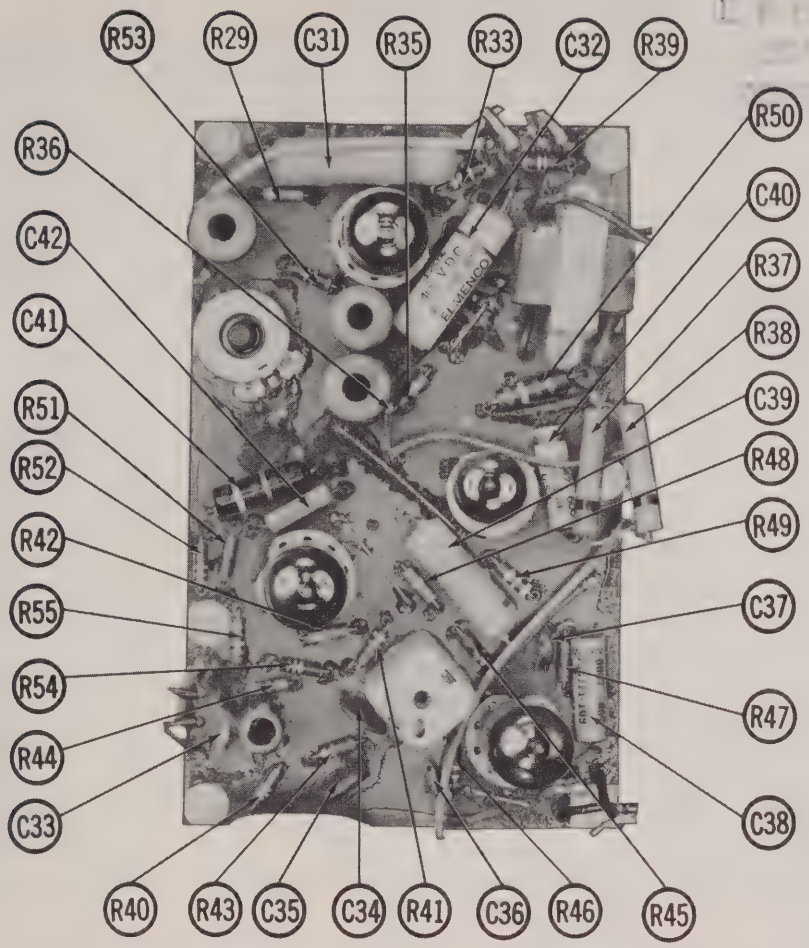
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	2BN4	0Ω	2.4Meg	1.5Ω	3Ω	†3000Ω	0Ω	2.4Meg		
V2	5CG8	10K	†8800Ω	0Ω	4Ω	3Ω	†3000Ω	†12K	0Ω	224K
V3	3CB6	2.1Meg	47Ω	4Ω	5Ω	†2500Ω	†2500Ω	0Ω		
V4	3CB6	1.5Ω	180Ω	5Ω	6Ω	†2500Ω	†2500Ω	0Ω		
V5	5U8	2.2Meg	.1Ω	†2500Ω	6Ω	7.5Ω	†2500Ω	180Ω	.1Ω	4700Ω
V6	12BY7A	• 95Ω	530K	0Ω	10.5Ω	10.5Ω	12Ω	†5000Ω	†2000Ω	0Ω
V7	5U8	†18K	27K	†14K	9Ω	10.5Ω	†2500Ω	0Ω	0Ω	2.6Meg
V8	5T8	100K	100K	170K	9Ω	7.5Ω	0Ω	0Ω	2.2Meg	†220K
V9	5AQ5	470K	270Ω	12Ω	13.5Ω	†1400Ω	†1000Ω	470K		
V10	6CG7	• †1.2Meg	•800K	0Ω	13.5Ω	15Ω	†15K	†1Meg	0Ω	0Ω
V11	5V6GT	TP	15Ω	†375Ω	†0Ω	2.2Meg	TP	16Ω	• 600Ω	
V12	6CG7	• †14K	1.5Meg	410K	16Ω	17.5Ω	†47K	480K	0Ω	0Ω
V13	12DQ6	NC	23Ω	NC	†8200Ω	440K	TP	19.5Ω	100Ω	TOP CAP ‡16Ω
V14	12AX4GTA	NC	NC	INF	NC	†7Ω	NC	17.5Ω	19.5Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡516Ω
V16	21ALP4A/B	0Ω	10K	PIN 6 †0Ω	PIN 10 ‡ 13Ω	PIN 11 • 180K	PIN 12 1.5Ω			

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION
† MEASURED FROM 265V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
NC NO CONNECTION.
TP TIE POINT.

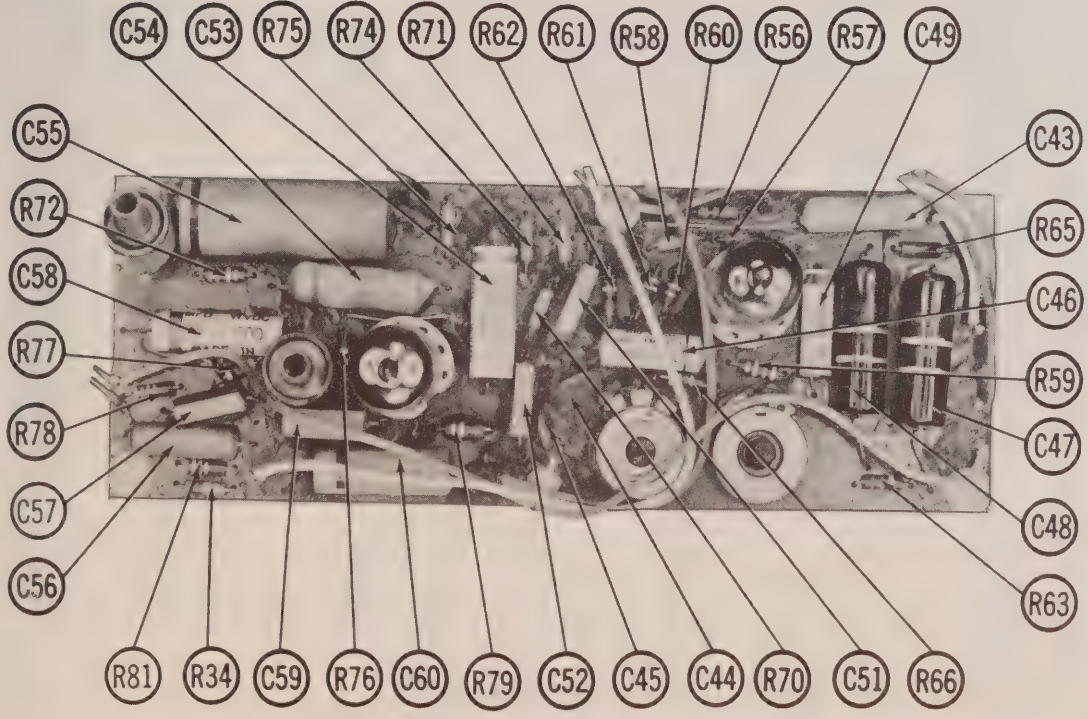


TUBE PLACEMENT CHART

PROPERTY OF



VIDEO & AUDIO PRINTED BOARD



SYNC & SWEEP PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	2BN4	
V2	Mixer-Osc.	5CG8	
V3	1st Video-IF Amp	3CB6	
V4	2nd Video-IF Amp - Sound-IF Amp	3CB6	
V5	3rd Video-IF Amp - Video Det - AGC Rect.	5U8	
V6	Video Output	12BY3A	

Note 1. Some versions use 13CU8 in this application

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	EMERSON PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	
V16	21ALP4A/B 24DP4A 2	21ALP4B 21ALP4A 1 24DP4A 24YP4 2	21ALP4A 21ALP40 2 24DP4A 24YP4 2	1 Aluminized 2 Silver screen "85" 3 Used in Ch. 120346-V

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	EMERSON PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C3	250	150	1	PR2-150	XA0263	WD251		T-060	RI308 *
C2A	120	300	925396	PR4-300	BHRQ0385	WQ405		Q-585 MT-4520	TVA-4584
B	40	330							
C	40	300							
C3A	120	300	925395	PR3-046-50	BH0326 BHRJ405	WT400		Q-545 MTH-5010	N250I *
B	40	330							
C	100	50							

* Non-catalog item.
1 Some versions may use 130MFD @ 150VDC (Part #925397) in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	EMERSON Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No	SPRAGUE Part No.	
C4	30		9619G0							
C5	800		961959							
C6	47		961961							
C7	1000		961950		EF-001	MFT-1000			503C-DI	
C8	30		961960							
C9	800		961959							
C10	800		961959							
C11	800		961959							
C13	800		961959							
C13	68		928896	NT50-S1 68	TCN-68	C10QS8U	TCT-68		5TCU-Q68	N750 10% ⑦
C14	130		928898	N750-S1 130	TCN-130	C10T13U	TCT-130		5TCU-T13	N750 10%
C15	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC532	5HK-DI	
C16	68		928872	NT50-S1 68	TCN-68	C10QS8U	TCT-68		5TCU-Q68	N750 5%
C17	6.8		928886			C10V68U	TCT-6.8			N750 10%
C18	.01	400	92514	P488N-01	D6-105	CUB4SI	GP-10000	GEM-411	4TM-S1	
C19	.15	300	923321	P288N-15		CUB2P15		GEM-3015	2TM-P15	
C20	1000		928933	BPD-001	DD-102	BYA6DI	DD-102	DC532	5HK-DI	⑤
C21	680		928909		D6-68	1B3T68	ED-680		MS-368	10%
C22	100		928927	NT50-S1 100	TCN-100	C10T1U	TCT-100	WT-531	5TCU-T1	N750 10%
C23	470		928907		D6-47I	L10T47	ED-470		MS-347	10%
C24	1000		928911			1B3DL	ED-1000		MS-31	10%
C25	47		928895	NT50-S1 47	TCN-47	C10Q47U	TCT-47	WT-5447	5TCU-Q47	N750 10%
C26	330		928903		D6-331	L10T33	ED-330		MS-333	10%
C27	1000		928911			1B3DL	ED-1000		MS-31	10%
C28	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC532	5HK-DI	
C29	4.7		928912	NPO-S1 4.7	TCS-4R7	C10V4TC	TCC-4.7	ET-6547	5TCU-S4.7	10%
C30	15		928872	N750-S1 15	TCN-15	C10Q15U	TCT-15		5TCU-Q15	N750 5%
C31	.047	400	925554	P488N-047	D-503	CUB4S47		GEM-4147	4TM-S47	⑤
C32	.047	400	925554	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C33	150		928903	NPO-S1 150	D6-151	L10T15	ED-150		2T-S151	10%
C34	5000		928923	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C35	5000		928923	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C36	1000		928913	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C37	3300		928922	BPD-0032	DD-332	BYA10D32	ED-0032	UC-5332	SGA-032	④
C38	.0047	600	923553	P488N-0047	D6-472	CUB4D47	GP-4700	GEM-6247	6TM-D47	⑤
C39	.032	400	923552	P488N-032	D6-323	CUB4S32	ED-32	GEM-4132	4TM-S32	⑤
C40	.0047	600	924753	P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C41	.01	400	924524	P488N-01	D6-103	CUB4SI	GP-10000	GEM-411	4TM-S1	
C42	220		92184	1488-00032	D6-221	SWT22	ED-220	UC-5322	2TM-322	
C43	.01	400	923514	P488N-01	D6-103	CUB4SI	GP-10000	GEM-411	4TM-S1	⑤
C44	1000		928913	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C45	1000		928913	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C46	.0047	600	924483							10%
C47	.1	600	924515	P488N-1	DF-104	CUB4PI		GEM-401	4TM-P1	
C48	.1	600	924515	P488N-1	DF-104	CUB4PI		GEM-401	4TM-P1	
C49	.01	400	924524	P488N-01	D6-103	CUB4SI	GP-10000	GEM-411	4TM-S1	
C50	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C51	82		92180	1469-00082	D6-820	22R5Q82	ED-82		MS-482	10%
C52	82		92180	1469-00082	D6-820	22R5Q82	ED-82		MS-482	10%
C53	.047	300	924354	P288N-047	DF-503	CUB2P47		GEM-4147	4TM-S47	
C54	.022	400	930069	P488N-022	DD-303	CUB4S22	ED-22	GEM-4122	4TM-S22	⑦
C55	.47	300	923353	P288N-47		CUB2P47		GEM-2047	2TM-P47	⑤
C56	.047	400	923554	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	⑤
C57	330		921S7	1469-00033	D6-331	6R5T33	ED-330		MS-333	10%
C58	.01	800	924514					GEM-1611		10%
C59	820		91133S	1484-00082		1R5T82	ED-820		MS-382	10%
C60	.001	400	924513	P488N-001	D6-102	CUB4SI	GP-1000	GEM-421	4TM-S1	
C61	.1	600	924515	P488N-1	DF-104	CUB4PI		GEM-401	4TM-P1	
C62	.22	300	923325	P288N-22		CUB2P22		GEM-3022	2TM-P22	
C63	.1	600	924515	P488N-1	DF-104	CUB4PI		GEM-401	4TM-P1	
C64	.01	400	923514	P488N-01	D6-103	CUB4SI	GP-10000	GEM-411	4TM-S1	
C65	100	3000	928932							N1500 10%
C66	1000	1000	928927	HVD-15-1000	DD-102	BYA10D1M	HD15-1000	DC502L	SGA-DI	
C67	10000		922301		D6-103	BYA10S1M	SD-01	DC5L	5HK-S1	
C68	.1	400	923206	P488N-1	DF-104	CUB4PI		GEM-402	4TM-P1	
C69	.1	300	923315	P288N-1	DF-104	CUB2P1		GEM-301	2TM-P1	⑪

CAPACITORS (cont)

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C70	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C71	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C72	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	
C73	1000		928933	BPD-001	DD-102	BYA6DI	ED-1000	DC531	5HK-DI	

2 In chassis 120345-V and 120345-E a 33MMF 10% 500V (Part #938894) is used in this application.
3 Some versions use a 10000MMF in this application.
4 In chassis 120346-V a 470MMF ± 20% 500V (Part #938816) is used in this application.
5 Part #930061 used in some versions.
6 Part #930055 used in some versions
7 Part #923524 used in some versions.
8 Part #930057 used in some versions.
9 Part #930033 used in some versions.
10 Part #930061 used in some versions.
11 Used in chassis 120345-E, -V, 120345-V only.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R8	4700Ω		928823	
R9	10KΩ		928833	
R10	3900Ω		928931	
R11	220K		928877	
R12	47K		928867	
R13	1000Ω		928911	
R14	10K		928833	
R15	10K		928833	
R16	6800Ω		928929	
R17	220K		928877	
R18	1000Ω		928911	
R19	330K		928881	
R20	8200Ω		928925	
R21	470Ω		928912	
R22	47Ω		928873	
R23	15K		928867	
R24	470Ω		928912	
R25	180Ω		928913	
R26	15K		928877	
R27	470Ω		928912	
R28	180Ω		928913	
R29	4700Ω		928923	
R30	22K		928882	
R31	27K		928883	
R32	2.2Meg		928892	
R33	33K		928883	
R34	56K		928812	
R35	10K		928833	
R36	4700Ω		928923	
R37	10K	2	928833	
R38	10K	2	928833	
R39	150K		928881	
R40	27K		928883	
R41	470Ω		928912	
R42	18K		928882	
R43	22K		928882	
R44	15Meg		928892	
R45	100K		928877	
R46	100K		928877	
R47	2.2Meg		928892	
R48	220K		928877	
R49	470K		928882	

ITEM No	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R50	270Ω	1	928852	
R51	2.2Meg		928892	
R52	470K		928882	
R53	15K		928872	
R54	27K		928883	
R55	22K		928882	
R56	1Meg		928893	
R57	10K		928833	
R58	3300Ω		928931	
R59	470K		928882	
R60	100K		928877	
R61	100K		928877	
R62	100K		928877	
R63	220K		928882	
R64	100K		928877	
R65	2.2Meg		928892	
R66	330Ω		928852	
R67	10K		928833	
R68	560Ω		928832	
R69	560Ω		928832	
R70	220K		928882	
R71	820K		928887	
R72	220K		928882	
R73	100K		928877	
R74	82K		928882	
R75	3900Ω		928832	
R76	180K		928882	
R77	6200Ω		928926	
R78	47K		928882	Note 1
R79	150K		928881	Note 2
R80	100Ω		928852	
R81	390K		928882	
R82	6300Ω	2	928912	
R83	100Ω	2	928852	
R84	10K		928833	
R85	18Ω		928852	
R86	2000Ω	10	928829	
R87	470Ω	2	928912	
R88	1000Ω	2	928912	
R89	5Ω	5	928858	
R90	50Ω	20	928895	Note 4
R91	220K		928877	
R92	220K		928877	

Note 1. Some versions may use 100K in this application.
Note 2. Some versions may use a 330K in this application.
Note 3. Not used when set has centering control.
Note 4. Chassis 120346G uses 43Ω 20W (Part #928197) in this application.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	800Ω	½	390487	F3-3			UR138	Contrast ①
B	1Meg	½		R3-52				Volume
C	Switch			KB-1				
A	600Ω	½	390407	F3-2	RTV-585	GJ-1008	UR4B	Contrast ②
B	1Meg	½		R3-52				Volume
C	Switch			KB-1				
R2	50K	½	390410	B-51				Horiz. Hold ③
R3A	1Meg	½	390435	B-69	A47-1Meg-S	GU-137	U54	Vert. Hold ④
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
A	1.5Meg	½	390409	B-764	A47-1.5Meg-S	GU-138	U55	Vert. Hold ⑤
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R4A	200K	½	390408	B-46	A47-200K-S	GU-139	U43	Brightness ⑥
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R5	25Meg	½	390403					Vert. Size
R6	1500Ω	½	390481					Vert. Lin.
R7	100K	½	390404					Picture Stabilizer

① Used in chassis 120345-E, 46-G.
② Used in chassis 120345-E, -V. Part #390421 used in chassis 120345-V
③ A dual concentric horiz. and vert. hold is used in some chassis.
④ Used in chassis 120345-E, 46-G.
⑤ Used in chassis 120345, 45-E. Part #390422 used in chassis 120346-V.
⑥ Part #390418 used in chassis 120345-V

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA						NOTES
		EMERSON PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	
T1	Vert. Output	73B139 ① 73B121 ②	Z1900 ③	A-2823 ④	V307 ④	A-8144 ④	26S72 ④	A-102X ④	
T2A	Yoke-Horiz. (9.4MHz)	70S813 ⑤	DF807	MDF-92	Y90F19 43	DY-16A	Y-16	Y-41 &	
B	(90°) Vert. (57MHz)	70S812 ⑥		T S	T S	T S	T S	NW5 T S	
M6	Yoke Rear Cover & Centering Device	708277							
T3	Horiz. Output	73B140 ⑦	FB419 ⑧ * $	HVO-92 ⑧ * $	X088 ⑧ * $	HO-256 ⑧ * $	FLY-18 ⑧ * $	D-80 ⑨ * $	
		73B126 ⑩ 73B129 ⑪							

1 Used in Ch. 120343-E, 44-G.
2 Used in Ch. 120345-E, V, 120346-V.
3 Use .8 to 1 turns ratio.
4 Drill new mounting hole(s).
5 May be used in all chassis.
6 May be used in Ch. 120345-E, -V only.
7 Use original horizontal damping network, if necessary.
8 Connect same as original. Use original rear cover and centering device. Cut and form a piece of .010 gauge tish paper inside the yoke itself and support with an acetate cement, to provide an insulation between the width sleeve and the yoke proper.
9 Used in Ch 120343-E, 44-G.
10 Used in Ch. 120345-E, 45-V.
11 Used in Ch. 120346-V
* This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	4	9	4	2	9	9	9
	8	5	8	1	5	5	5
	7	5	7	8	5	5	5
	2	NC See Note ⑫	NC See Note ⑫	4	NC See Note ⑫	NC See Note ⑫	NC See Note ⑫
	5	1	5	7	1	1	1
	1	1	1	5	1	1	1
Special Notes		⑫ ⑬	⑫ ⑭		⑫ ⑬	⑫ ⑬	⑫ ⑬

⑫ Install new damping network, consisting of approx. 56MMF ② 2KV and 10000Ω 1 watt resistor, connected in series across horizontal yoke terminals #2 and #7.
⑬ If insufficient width, add capacity (approx. 50-100MMF ② 4KV) across horizontal yoke terminals #2 and #1.
⑭ Remove one turn from filament winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	4900Ω	3.4Ω	73A146 ① 73A130 ②	22110 ③	A-3928 ③	A-3328 ②	24S48 ③	S-8X ③	① Used in Ch. 120343-E, 44-G. ② Used in Ch. 120345-E, -V, 120346-V. ③ Use original channel mounting frame.

SPEAKER

ITEM No.	TYPE				REPLACEMENT DATA		NOTES
	SIZE	FIELD	V C	IMP	EMERSON PART No	QUAM PART No	
SP1	4"	PM	3-4Ω		180II ①	4A07	① Used in Models 2036, 57, 60, 61
	6"	PM	3-4Ω		180J4D ②	6A1	② Used in Models 2034S, 58, 59, 62, 63
	5"	PM			180I4I ③ ④		③ Used in Models 2038S, 40S, 42S
							④ Two used.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA		NOTES
		EMERSON PART No.	MEISSNER PART No.	
L1	Ant. Trans.	981944		
L2	IF Trap Coil	981945		

ITEM No.	USE	REPLACEMENT DATA		NOTES
		EMERSON PART No.	MEISSNER PART No.	
L3	IF Trap Coil Miner Plate Coil	981946		
L4		981943		

ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L5	47.25MC Trap	708213				
L6	1st. Video IF	720344				Includes Cap.
L7A	2nd. Video IF	720341				
B	1st. Sound IF					
L8A	3rd. Video IF	720199				
B	2nd. Sound IF					
L9	4th. Video IF	720247	17-4533 *	TV-130 *	6219 *	* Drill mounting hole.
L10	RF Choke	708236	10-1003	BC-564	4508	4.6 Microhenries
L11	RF Choke	708034	10-1004	BC-565	4510	6.8 Microhenries, IRC Part #CLA
L12	Shunt Peaking Coil	708274	10-3860	TV-306	6148	680 Microhenries
L13	Series Peaking Coil	708273	10-3300	TV-130	6132	330 Microhenries
L14	Shunt Peaking Coil	708274	10-3680	TV-306	6148	680 Microhenries
L15	RF Choke	708270	10-3003	BC-564	4608	4.6 Microhenries
L16	Discriminator	708276				
L17	RF Choke	708021	10-1005	BC-566	4613	10 Microhenries, IRC Part #CL-1.

EMERSON MODELS 20345, 385, 405, 425, 2036, 57, 58, 59, 60, 61, 62, 63 (Ch. 120343E, 120344C, 120345E, V, 120346V)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18 L19	117Ω * 27Ω		716102 708275						Horiz. Osc. Horiz. Waveform *Tapped @ 86Ω

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: EMERSON PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L20	.240A	20Ω	.64 HY.	737019 ① 737023 ②	C5041 ③	C-2998 ③	C-2328 ③ C-2328 ③	26C44 ③	C-24X C-27X

① Used in Ch. 120343-E, 44G.
② Used in Ch. 120345E, -V, 120346-V.
③ Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K1	Antenna Isolation	470MMF, .3-1Meg		Centralab RC-471
K2	Antenna Isolation	470MMF, .3-1Meg		Centralab RC-471

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: EMERSON PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.290A	817058 ①	1236A-H ①	1N1007 ②	RS350 ①	350A ①	① Selenium type.
M2	.290A	817058 ①	1236A-H ①	1N1007 ②	RS350 ①	350A ①	② Germanium type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: EMERSON PART No. FUSE	EMERSON PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	N	1 1/4A 125V S/B	808013		3331.25 (N 1 1/4A 125V S/B)	346011	N 1 1/4	HN 3/4 to 1 1/4

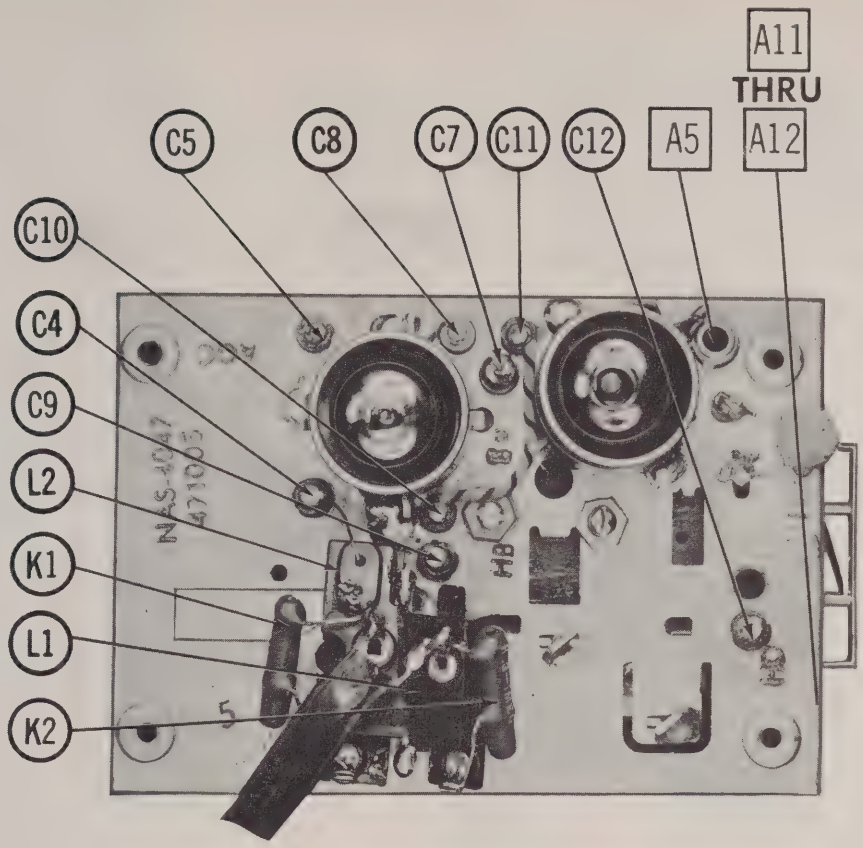
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Tuner	471005	VHF, Models 2060, 2062, 2056, 2058, (Ch. 120343-E)
	Tuner	470908	VHF, Models 2034S, 38S (Ch. 120345-V)
	Tuner	471013	VHF, Models 2034S, 38S (Ch. 120345-E)
	Tuner	470913	VHF, Models 2040S, 42S (Ch. 120346-V)
	Tuner	471016	UHF-VHF, Models 2061, 63, 57, 59 (Ch. 120344-G)
M5	Width Sleeve		
M6	Centering Device	708277	Includes yoke rear cover
M7	Ion Trap	708235	

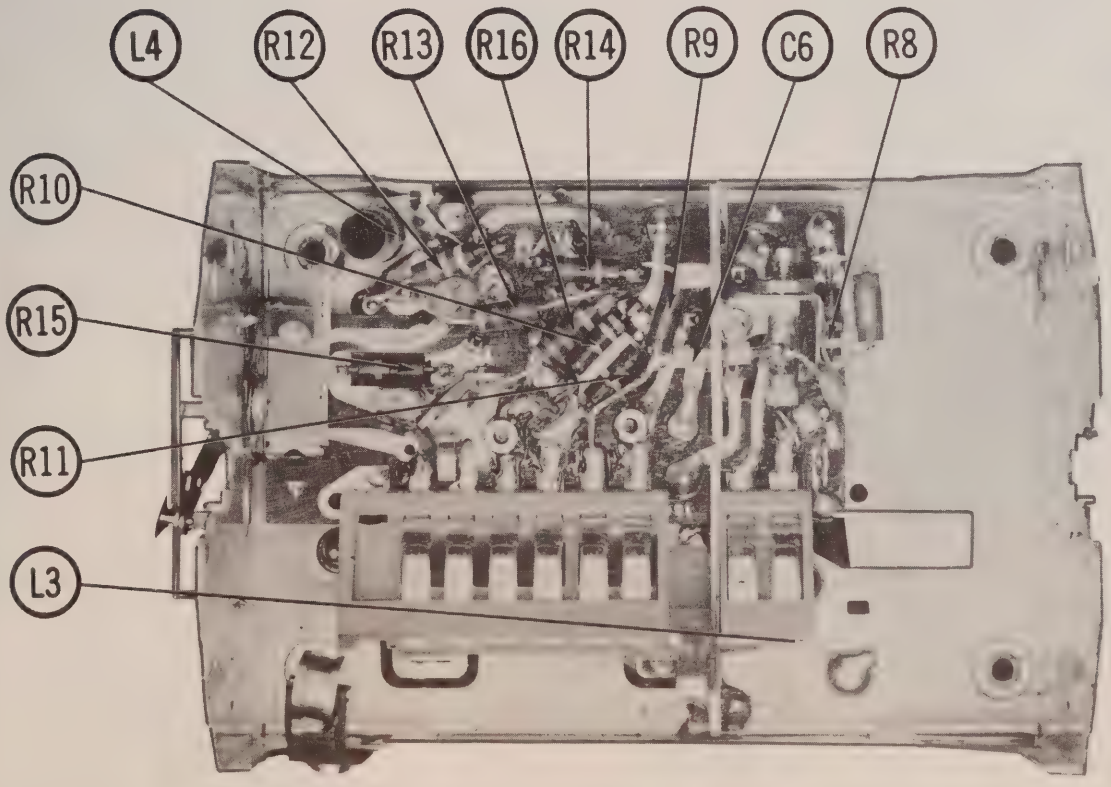
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

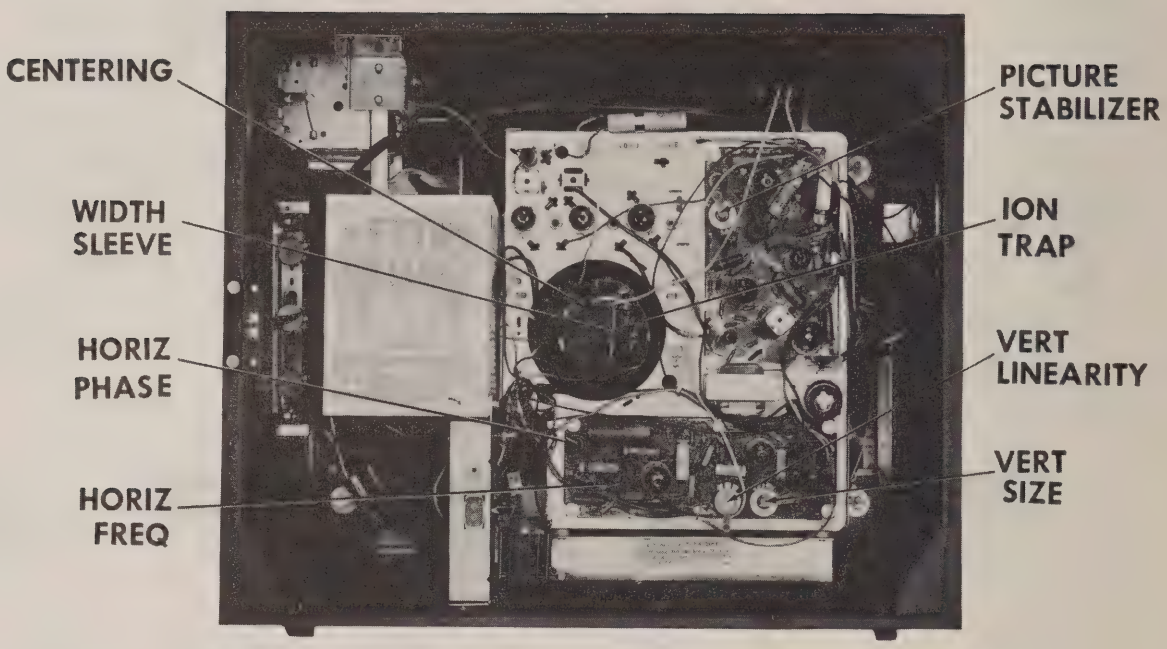
NAME	PART NO.	DESCRIPTION
Safety Glass	520243	Models 2034S, 38S, 56, 57, 58, 59, 60, 61, 62, 63
Safety Glass	520232	Models 2040S, 42S
Mask	460697Q	Bright gold with white gold frame
Mask	460697S	White Gold with bright gold frame
Mask	460697C	Rose Gold and green
Mask	460688E	Green
Escutcheon	412332	
Knob	450248	VHF Channel Selector, Models 2056, 58, 60, 62
Knob	460690D	VHF Channel Selector, (UHF-VHF Models) Models 2057, 59, 61, 63
Knob	450236C	Channel Selector, Models 2040S, 42S
Knob	450253	Channel Selector, Models 2034S, 38S (Ch. 120345-V)
Knob	450227	Channel Selector, Models 2034S, 38S (Ch. 120345-E)
Knob	460691D	UHF Channel Selector, Models 2057, 59, 61, 63
Knob	450252	Fine Tuning, VHF, Models 2056, 58, 60, 62
Knob	460692	Fine Tuning, UHF-VHF, Models 2057, 59, 61, 63
Knob	460234A	Fine Tuning, Models 2034S, 38S
Knob	460672B	Fine Tuning, Models 2040S, 42S
Knob	450249	On-off-volume, Models 2056, 58, 60, 62
Knob	460852	On-off-volume, Models 2057, 59, 61, 63
Knob	450228	On-off-volume, Models 2034S, 38S
Knob	450233	Volume and horizontal hold, Models 2040S, 42S
Knob	450251	Contrast, Models 2056, 58, 60, 62
Knob	460853	Contrast, Models 2057, 59, 61, 63
Knob	460233A	Contrast, Models 2034S, 38S
Knob	460713C	Brightness, vert. hold, horiz. hold, Models 2056, 57, 58, 59, 60, 61, 62, 63
Knob	460713	Brightness, vert. hold, horiz. hold, Models 2034S, 38S
Knob	450234	Tone and brightness, Models 2040S, 42S
Cabinet Legs	412422	Model 2034S
Cabinet Legs	412410	Model 2040S
Cabinet Legs	412546	Models 2056, 57



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.
Turn picture stabilizer control (R7) fully clockwise.
Set the horizontal hold control to the center of its range.
Connect a short across L19.
Adjust horizontal frequency slug (B1) to the center of the range in which the picture is synchronized horizontally.

Remove the short from L19.
Connect the vertical amplifier of the scope to point (E) thru a low capacity probe. Low side to chassis.
Adjust horizontal waveform slug (B2) until the broad and narrow peaks are of equal amplitude similar to Fig. 3.
Remove the scope connection. The picture should remain in sync through out the entire range of the horizontal hold control.

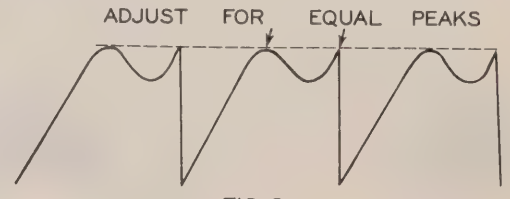


FIG. 3

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the top.
2. Remove 3 metal screws holding the rear cover. Remove the rear cover.
3. Remove 1 phillips head screw holding the built-in antenna.
4. Remove 3 metal screws holding the top chassis brace.
5. Remove the picture tube socket and ion trap.
6. Remove 3 chassis bolts from the bottom.
7. Partially remove the chassis. Remove the speaker leads, HV lead and yoke. Remove the chassis.

MODEL 17P1330 (M3 LINE)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	General Electric	MODELS 17P1328, 17P1329, 17P1330, 17P1331, 21C1449, 21C1450, 21T1439 (M3 Line)
MANUFACTURER	General Electric Co., Appliance And Television Receiver Div., Louisville, Ky.	
TYPE SET	Television Receiver	
TUBES	Fifteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 140 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENT

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 metal screws from the bottom holding the front. Pull the bottom of the front out and swing up to remove. NOTE: Use only water and soft cloth for cleaning.

FOCUS

Adjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A10) located on top of chassis.

FUSES

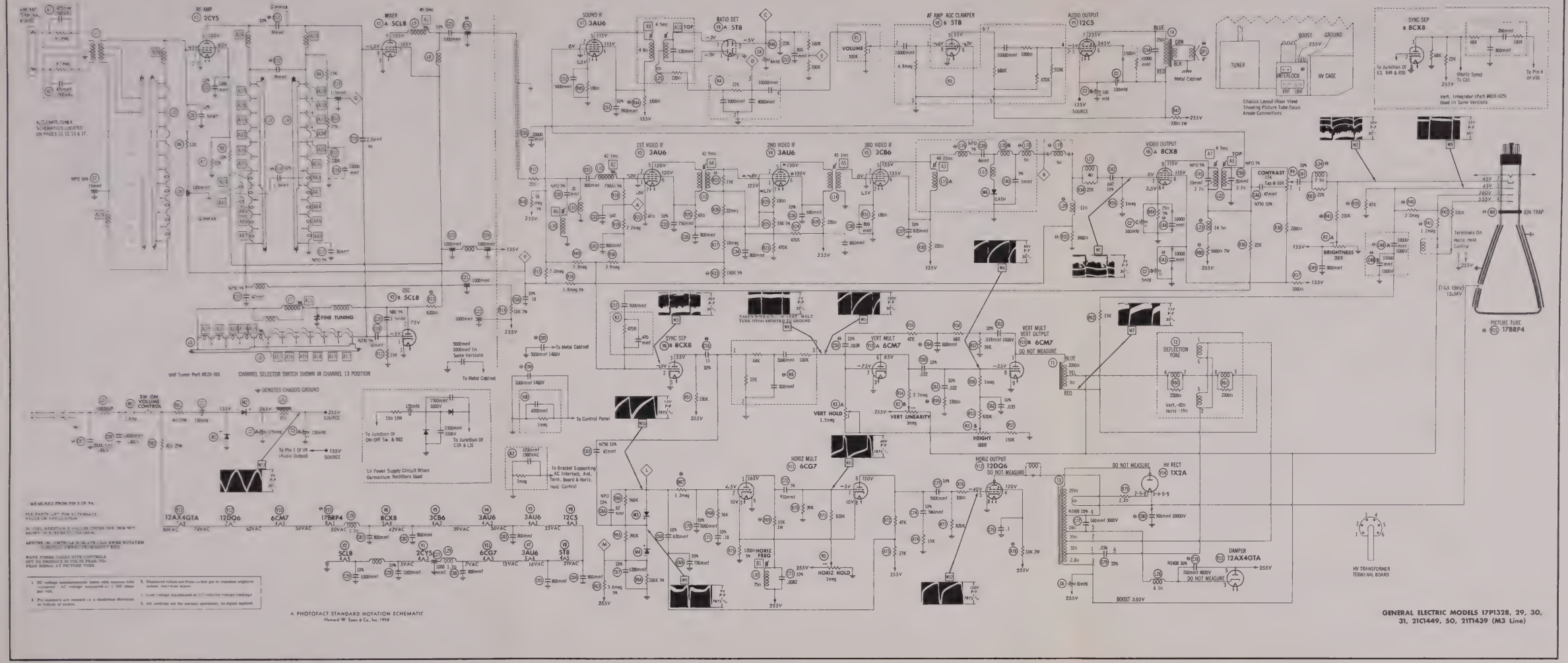
One fuse is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

GENERAL ELECTRIC MODELS 17P1328, 29, 30, 31, 21C1449, 50, 21T1439 (M3 Line)

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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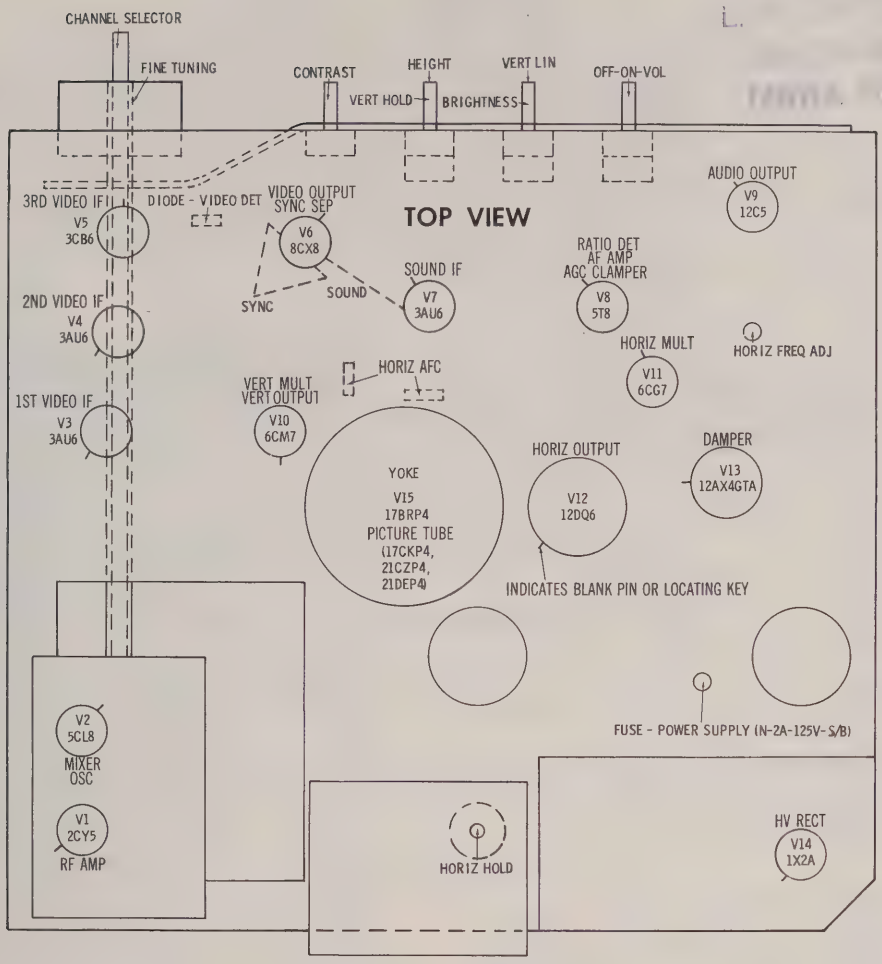
GENERAL ELECTRIC MODELS 17P1328, 29, 30, 31, 21C1449, 50, 21T1439 (M3 Line)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

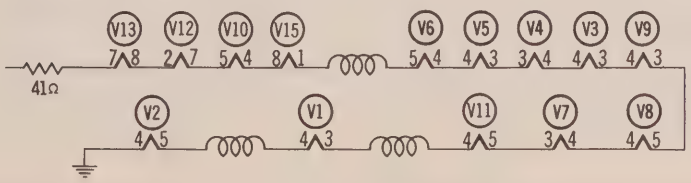
POWER SUPPLY FAILURE
No raster, no sound - **Fuse (M5), Rectifier (M1, M2)**

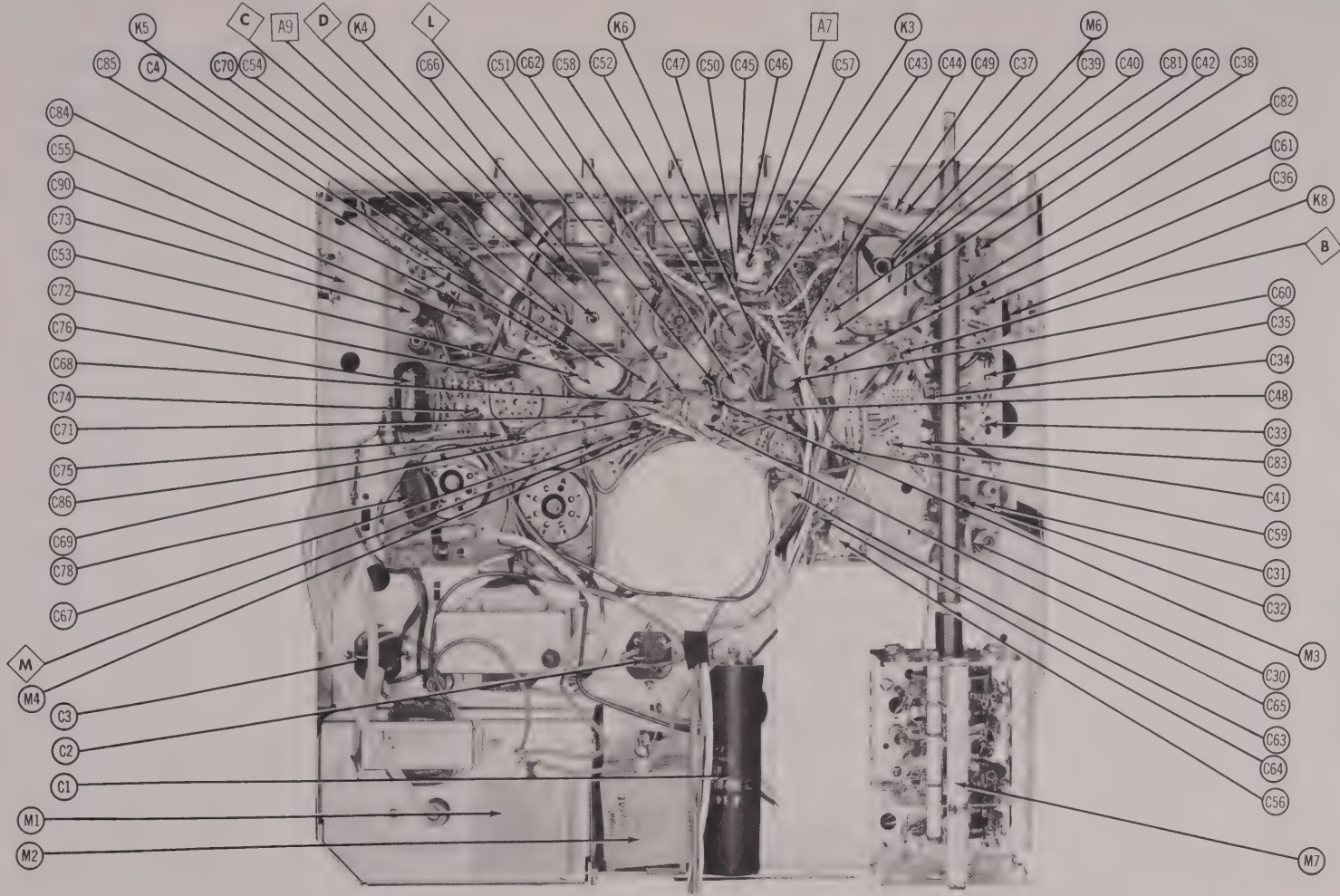
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M6), V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V15**
Has pic, no sound - **V7, V8, V9**
Overloaded picture - **V8**

SYNC FAILURE
No vert. sync - **V6**
No horiz. sync - **V6, Diode (M4, M3)**
No vert. or horiz. sync - **V6**

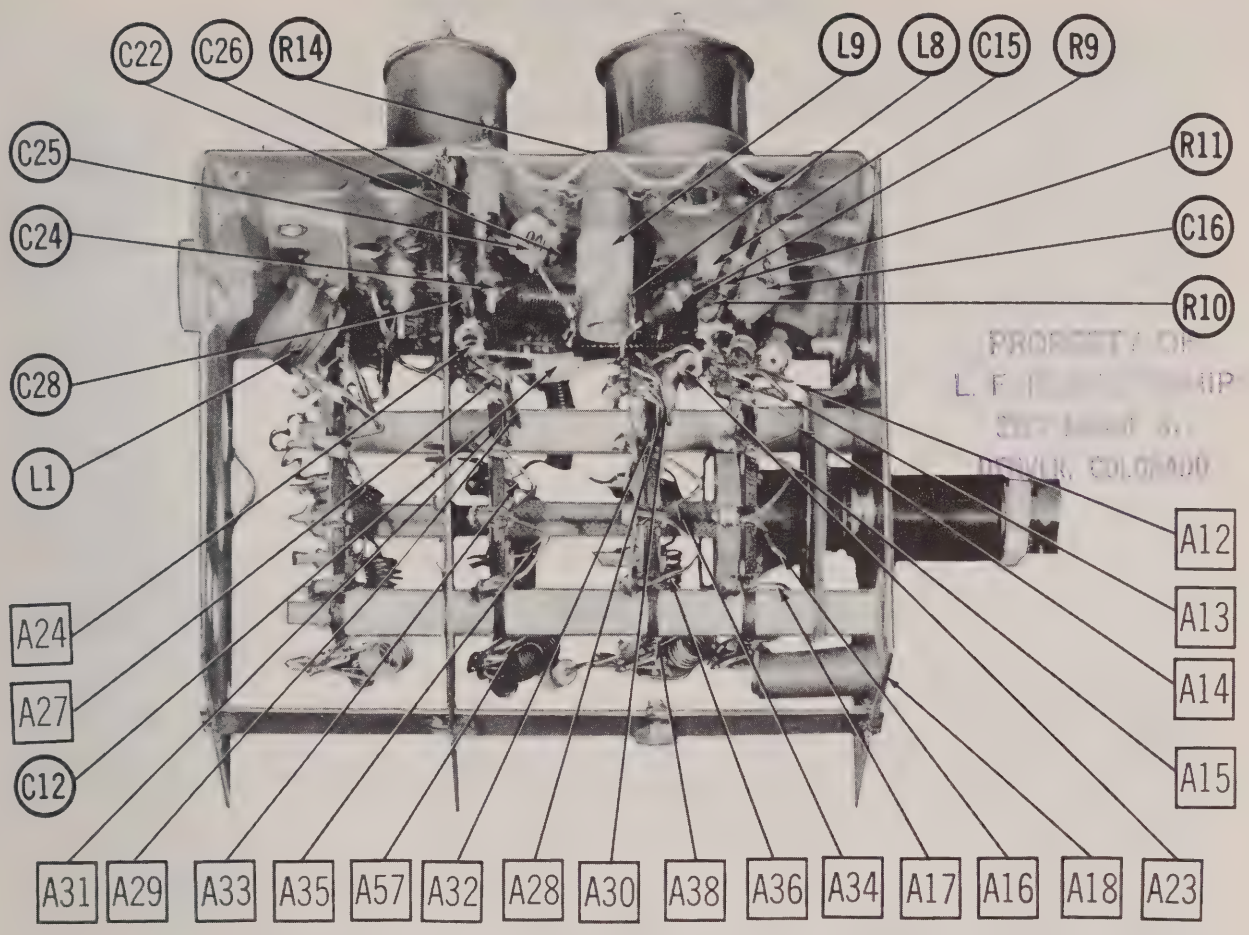
SWEEP FAILURE
No raster, has sound - **M3, M4, V11, V12, V13, V14, V15**
No vertical deflection - **V10**
Poor vert. linearity or foldover - **V10**
Poor horiz. linearity or foldover - **V11, V12, V13**
Narrow picture - **V11, V12, V13, M1, M2**
Vert. off freq. - **V10**
Horiz. off freq. - **V11**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).

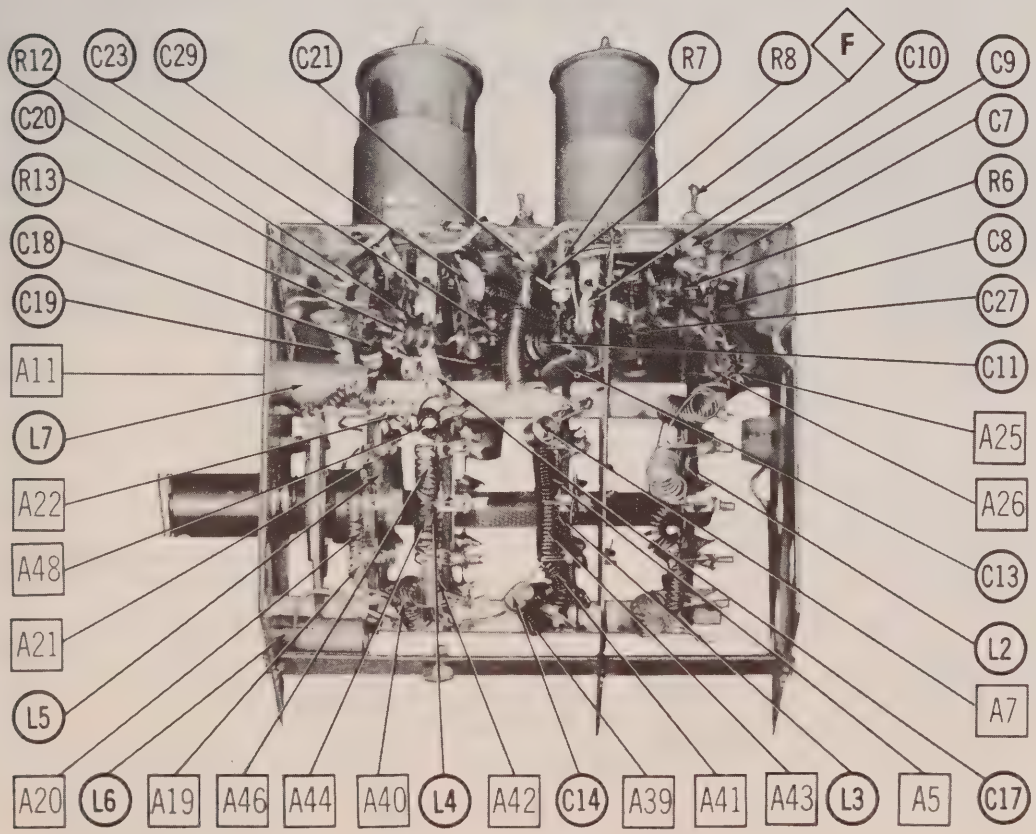




CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
If two peaks are found for any one adjustment, use peak nearest bottom of coil form.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the mixer-osc. tube (V2) and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	45.0MC (Unmod)	Any non-interfering channel	USE VTVM. DC probe thru 10K to point Ⓑ. Common to chassis.	A1	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
2.	"	"	"	42.5MC	"	"	A2	"
3.	"	"	"	44.15MC	"	"	A3	"
4.	"	"	"	42.9MC	"	"	A4	"
5.	"	"	"	45.1MC	"	"	A5	"
6.	"	"	44MC (10MC Swp)	41.25MC 42.5MC 45.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.	A1, A2, A3, A4, A5, A6	Check for response similar to Fig. 1. If necessary, retouch A1 thru A5 for desired response. Adjust A6 to place 47.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point Ⓑ. Low side to chassis.	Not used	4.5MC (400∿ 30% AM)	Any non-interfering channel	Vert. Amp. thru detector probe to pin 7 (cathode) of picture tube.	A7	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High iside to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓒ. Common to chassis.	A8, A9	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point Ⓓ. Common to point Ⓔ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 2	Across antenna terminals thru matching network (Fig. 2).	213MC	211.25MC	13	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis.	A11	Adjust to place video marker at 50% on curve.
			207MC	205.25MC	12		A12	
			201MC	199.25MC	11		A13	
			195MC	193.25MC	10		A14	
			189MC	187.25MC	9		A15	
			183MC	181.25MC	8		A16	
			177MC	175.25MC	7		A17	
			85MC	83.25MC	6		A18	
			79MC	77.25MC	5		A19	
			69MC	67.25MC	4		A20	
			63MC	61.25MC	3		A21	
			57MC	55.25MC	2		A22	

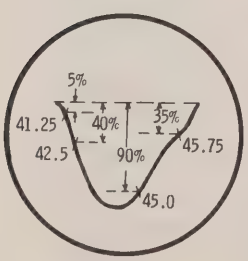


FIG. 1

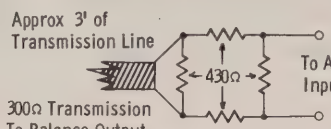


FIG. 2A

For Sweep Generator With Unbalanced Output

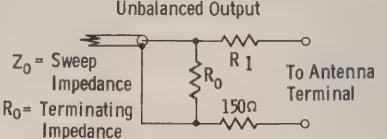


FIG. 2 B

Z_0	R_0	R_1
50Ω	50Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT FOR TUNERS #RJX-101 AND RJX-106

Connect the negative lead of a 3 volt bias supply to point Ⓕ. Positive to chassis.
Disconnect tuner output leaving ground wire connected. Connect a 68Ω resistor from the tuner output to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
If in the following steps, it is found that the bandwidth is incorrect, adjust the gimmick of C11. Moving the gimmick nearer the capacitor will increase the bandpass and vice-versa.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Fig. 2	Across antenna terminals thru matching network (Fig. 2.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓖ. Low side to chassis.	A23,A24, A25,A26	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A23 affects picture side of curve and A24 affects sound side.
12.	"	"	207MC	205.25MC 209.75MC	12	"	A27,A28	Adjust in numberical order, the sound side is first affected and then the video side. Adjust for curve similar to Fig. 3.
13.	"	"	201MC	199.25MC 203.75MC	11	"	A29,A30	"
14.	"	"	195MC	193.25MC 197.75MC	10	"	A31, A32	"
15.	"	"	189MC	187.25MC 191.75MC	9	"	A33,A34	"
16.	"	"	183MC	181.25MC 185.75MC	8	"	A35, A36	"
17.	"	"	177MC	175.25MC 179.75MC	7	"	A37, A38	"
18.	"	"	85MC	83.25MC 87.75MC	6	"	A39,A40	Adjust in numerical order, the sound side is first affected and then the video side. Adjust for curve similar to Fig. 4.
19.	"	"	79MC	77.25MC 81.75MC	5	"	A41,A42	"
20.	"	"	69MC	67.25MC 71.75MC	4	"	A43,A44	"
21.	"	"	63MC	61.25MC 65.75MC	3	"	A45,A46	"
22.	"	"	57MC	55.25MC 59.75MC	2	"	A47,A48	"

VHF RF AND MIXER ALIGNMENT FOR TUNERS #RJX-107 AND RJX-108

Connect the negative lead of 3 volt bias supply to point Ⓕ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
23.	Fig. 2	Across antenna terminals thru matching network (Fig. 2).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓖ. Low side to chassis.	A49,A50, A51	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown.
24.	"	"	"	"	"	"	A52,A53	Check for response similar to Fig. 3. Adjust A52 for proper bandwidth by moving capacitor lead (A52) with respect to high band coupling strap. Adjust A53 SLIGHTLY if necessary to correct for excessive dip.
25.	"	"	177MC	175.25MC 179.75MC	7	"	A54,A55	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Bandwidth is adjusted by varying the gimmick wire with relation to its distance from the adjacent capacitor.
26.	"	"	207MC	205.25MC 209.75MC	12	"		Check for response similar to Fig. 3 on each channel. If necessary, make compromise adjustment of A54 and A55. Replace tuner shield when checking response.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
27.	"	"	85MC	83.25MC 87.75MC	6	"	A56,A57, A58	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown.
28.	"	"	79MC	77.25MC 81.75MC	5	"	A59,A60, A61	"
29.	"	"	69MC	67.25MC 71.75MC	4	"	A62,A63, A64	"
30.	"	"	63MC	61.25MC 65.75MC	3	"	A65,A66, A67	"
31.	"	"	57MC	55.25MC 59.75MC	2	"	A68, A69, A70	"

ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

Disconnect tuner output leaving ground wire connected and terminate with 68Ω resistor.
Connect the negative lead of a 3 volt bias supply to point Ⓕ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
32.	Fig. 5	High side thru network (Fig. 5) to point Ⓗ. Low side to chassis.	43MC (10MC Swp)	40.5MC 45.75MC	UHF Tune for MINIMUM tilt over center tuning area	Vert. Amp. thru 10K to point Ⓖ. Low side to chassis.	A71, A72, A73	Adjust for maximum gain and symmetry of response similar to Fig. 6 with markers as shown. Adjust A73 for MINIMUM tilt.

UHF TUNER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓕ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
33.	Fig. 2	Across UHF antenna terminals thru matching network (Fig. 2).	460MC	460MC	UHF Rotate UHF tuner shaft fully counter clockwise.	Vert. Amp. thru 10K to point Ⓖ. Low side to chassis.	A74	Adjust to place marker in trap notch.
34.	"	"	910MC	910MC	Rotate UHF tuner shaft fully clockwise.	"	A75	Adjust to place marker in trap notch. Repeat steps 33 and 34 until the marker is in the trap notch at both ends of the band.
35.	"	"	530MC	530MC	UHF (See remarks)	"		Rotate UHF tuner shaft until the 530MC marker falls in trap notch. Retune sweep SLIGHTLY if necessary to center marker and notch on scope.
36.	"	"	"	"	UHF (leave as in above step)	Disconnect coaxial cable at the VHF tuner and connect a 33Ω carbon resistor from inner conductor to cable shield. Connect vertical amplifier across the 33Ω resistor thru an audio amplifier.	A76, A77	Connect a short across points Ⓙ and Ⓚ. With .1 volts peak to peak input, calibrate scope to produce 2 inches of deflection. Adjust A76 and A77 for symmetrical response on either side of the marker as in Fig. 6. Remove the short between points Ⓙ and Ⓚ. Remove the 33Ω resistor and reconnect coaxial cable.
37.	"	"	880MC	880MC	UHF (See Remarks)	Vert. Amp. thru 10K to point Ⓖ. Low side to chassis.		Rotate UHF tuner shaft until marker falls in trap notch. Retune sweep SLIGHTLY if necessary to center notch and marker on scope.
38.	"	"	"	"	UHF (leave as in above step)	Same as step 36.	A78, A79	Connect a short between points Ⓙ and Ⓚ. Adjust for symmetrical response on either side of marker as in Fig. 6. Remove short from points Ⓙ and Ⓚ. Remove amplifier and 33Ω resistor. Reconnect coaxial cable. Repeat steps 35 thru 38 until symmetrical response is obtained at both 530MC and 880MC.

Check the response curve through out the entire UHF band and check for abnormally low gain points within the UHF tuning range. This is usually caused by insufficient oscillator injection and checked by measuring the crystal current. Disconnect the UHF output cable and connect a 0-5MA meter across output cable. The crystal current should be between .65 and 3 milliamperes under normal conditions. If the reading is outside these limits, adjust the oscillator injection loops (A80) with respect to the crystal clip terminals.

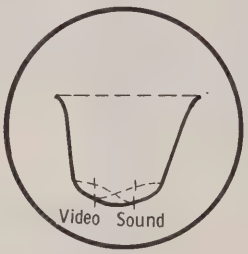


FIG. 3

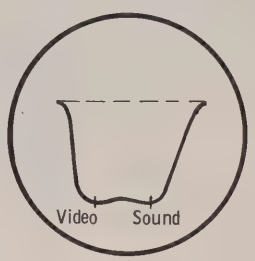


FIG. 4

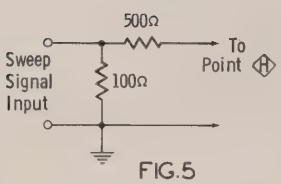


FIG.5

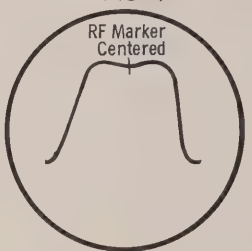
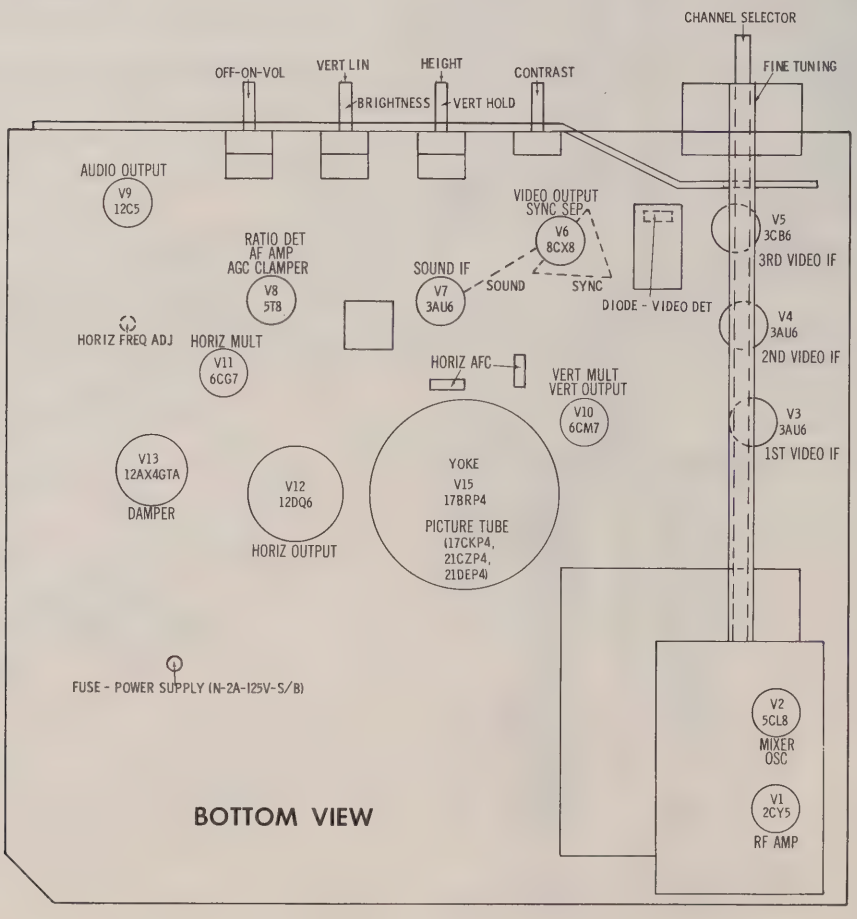


FIG. 6

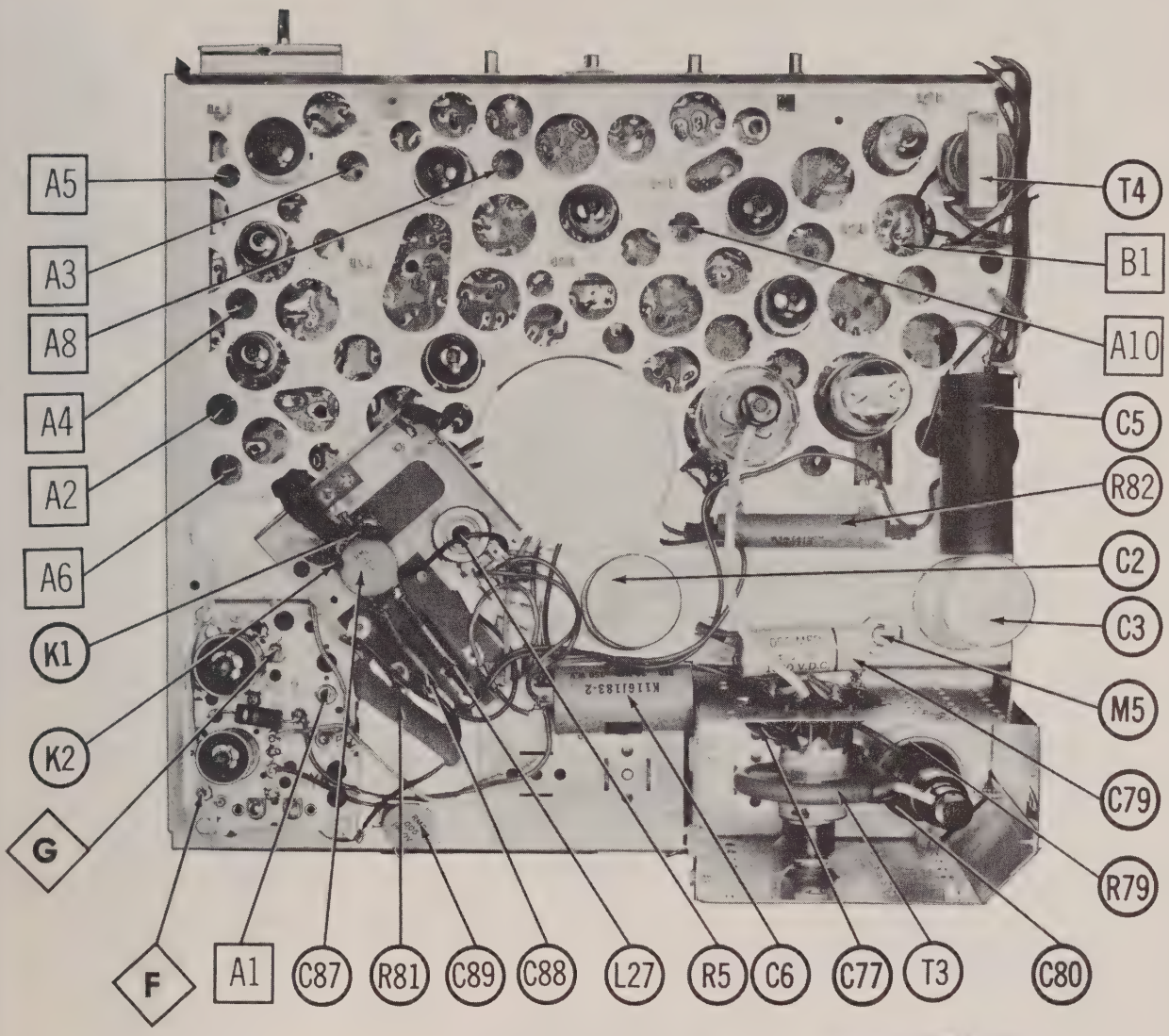
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	2CY5	1.4Meg	0Ω	2Ω	1.5Ω	†10K	▪ 8500Ω	0Ω		
V2	5CL8	15K	▪ 8200Ω	0Ω	0Ω	1.5Ω	▪ .1Ω	▪0Ω	0Ω	260K
V3	3AU6	2.3Meg	0Ω	9.5Ω	10Ω	▲ 47Ω	▲ 47Ω	47Ω		
V4	3AU6	▲ 33K	†270K	10Ω	10.5Ω	†220Ω	†220Ω	▲ 100Ω		
V5	3CB6	.1Ω	180Ω	10.5Ω	11.5Ω	▪ 220Ω	▪ 220Ω	0Ω		
V6	8CX8	0Ω	2.4Meg	†330K	11.5Ω	13.5Ω	75Ω	1Meg	▪850Ω	†5000Ω
V7	3AU6	2.7Ω	0Ω	4.5Ω	5.5Ω	▪ 3300Ω	▪ 3300Ω	180Ω		
V8	5T8	INF	22K	INF	5.5Ω	6.5Ω	2.3Meg	0Ω	6.8Meg	†680K
V9	12C5	20K	300K	6.5Ω	9.5Ω	300K	†330Ω	†580Ω		
V10	6CM7	‡2000Ω	NC	0Ω	20Ω	18Ω	• †3.3Meg	• 1.1Meg	• 2Meg	0Ω
V11	6CG7	†15K	1.7Meg	1200Ω	3.5Ω	4.5Ω	†75K	34K	1200Ω	0Ω
V12	12DQ6	0Ω	23Ω	NC	†10K	820K	0Ω	20Ω	0Ω	TOP CAP ‡30.5Ω
V13	12AX4GTA	NC	NC	¶	NC	†0Ω	NC	27Ω	23Ω	
V14	1X2A	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡385Ω
V15	17BRP4	16Ω	47K	750K	‡100K	NC	NC	270K	18Ω	

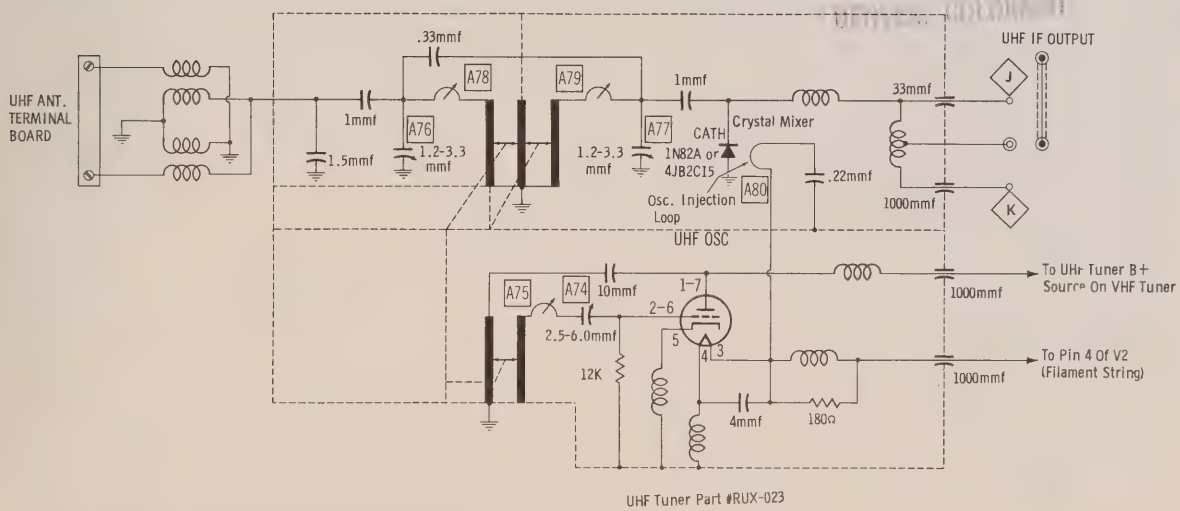
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V13.
▪ MEASURED FROM 135V SOURCE.
▲ MEASURED FROM PIN 2 OF V4.
NC NO CONNECTION.



TUBE PLACEMENT CHART



CHASSIS TOP VIEW

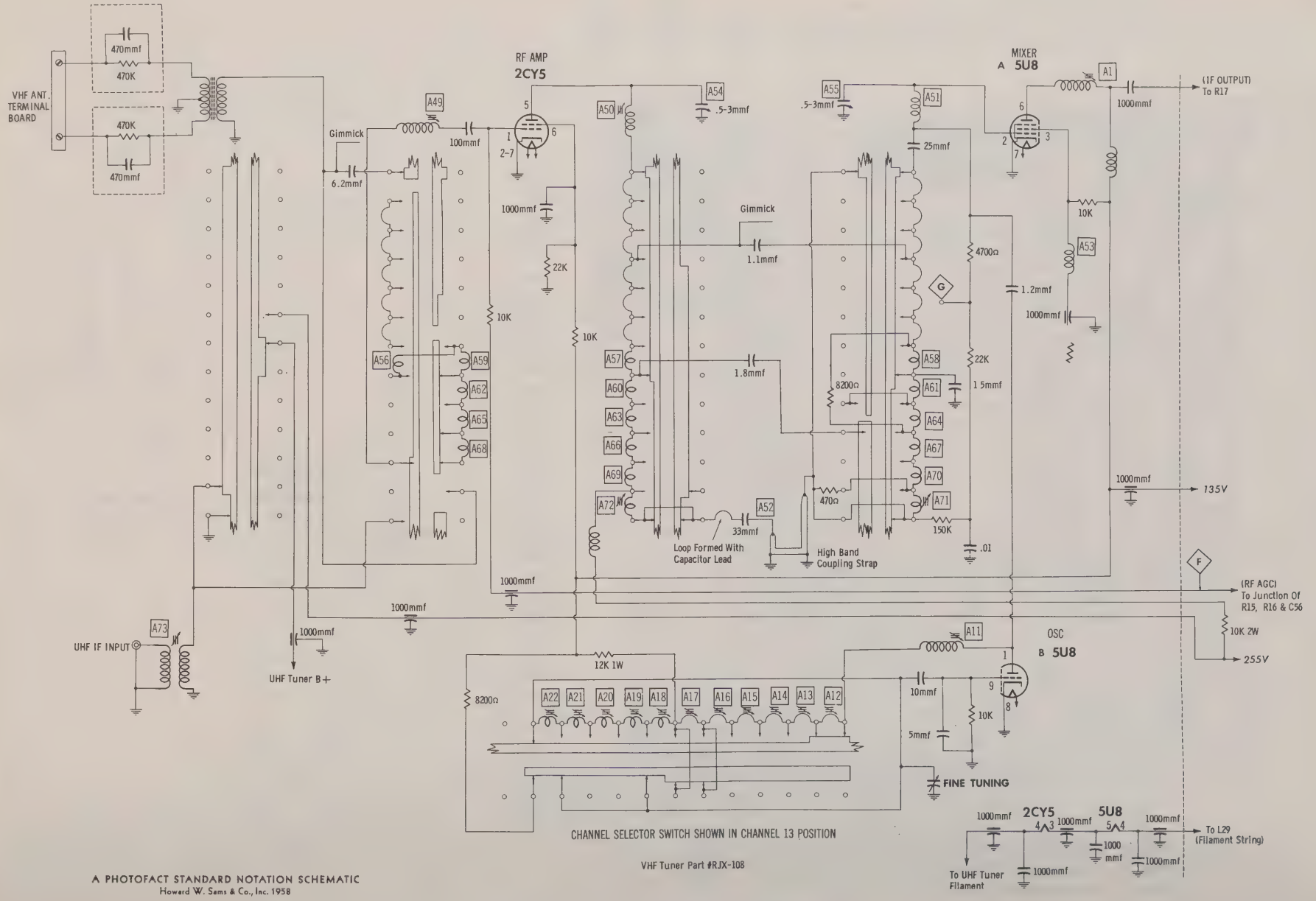


UHF Tuner Part #RUX-023

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

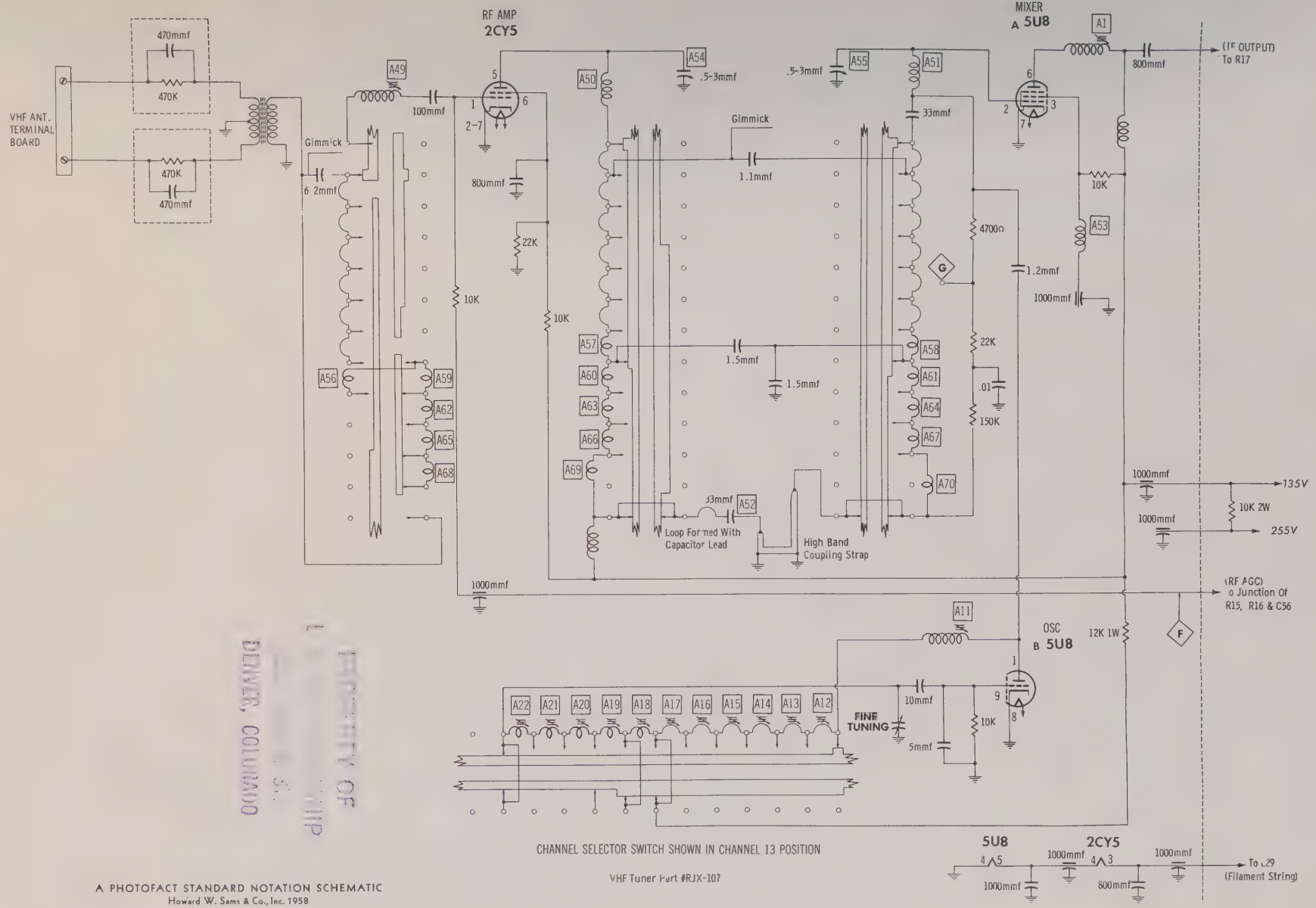
ALTERNATE TUNER SCHEMATIC

SET 383 FOLDER 3



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE TUNER SCHEMATIC



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

VHF Tuner Part #RJX-107

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE TUNER SCHEMATIC

GENERAL ELECTRIC MODELS 17P1328, 29, 30, 31, 21C1449, 50, 21T1439 (M3 Line)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	3CY5	
V2	Mixer-Osc	5CL8	
V3	1st Video-IF Amp	3AL6	
V4	2nd Video-IF Amp	3AL6	
V5	3rd Video-IF Amp	3CH6	
V6	Video Output-Sync Sep	6CS8	
V7	Sound IF Amp	3AL6	

ITEM No	USE	TYPE	NOTES
V8	Ratio Det - AF Amp - AVC Clamper	5T8	
V9	Audio Output	2C5	
V10	Vert. Mult - Vert. Output	6CM7	
V11	Horiz. Mult	6CQ7	
V12	Horiz. Output	6DQ6	
V13	Damper	12AX4GTA	
V14	HV Rectifier	1X2A	

PICTURE TUBE

ITEM No	G E PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	NOTES
V15	17BRP4	17BRP4	17BRP4 ②	1 Aluminized. 2 Silver-screen 65 3 Manufacturer recommends replacing with 17BRP4 and changing ion trap. 4 Manufacturer recommends replacing with 21CZP4 and changing ion trap
	21CKP4 ③	17BRP4 ④		
	21CZP4 ④	21CZP4 ④		
	21DEP4 ④	21CZP4		

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	RATING VOLT	G. E. PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1	150	150	RCE-233	AFHSI-23	XAC2S1	FP17	TMS-25	FM-1S150	TVL-1429
C2A	25	350	RCE-309	AFHS-15S-50	C13S5	FP25T.4		T-4J7	TVL-3S10
B	50	150							
C	200	50							
C3 A	30	100	RCE-235	AFH2-S2-45	BO80S	FP13I TC4S2		S-300 MT-15100	R2339 *
B	200	150							
C4	4	50	RCE-236	PRS150V4	BBR4-50	TC3S	TD-4-50	MT-0604	TVA-1402
C5	30	350	RCE-233	AFH1-3I	XA024I	FP1I8	TMS-33	S-080	TVL-1423
C6	30	350	RCE-232	PRS350V30	B83G35	TCT7	TD-30-350	MT-4530	TVA-1610

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING CAP	RATING VOLT	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No	SPRAGUE PART No	NOTES
C7	15		RCW-3224							NPO 10%
C8	5		RCW-3123	NPO-S1 5		C10V5C	TCO-5	ZT-555		10%
C9	1000		RCW-3269	EF-001	MFT-1000				503C-D1	
C10	1000		RCW-3323				ED-1000			10%
C11	39		RCK-031							10% ①
C12	39									
C13	47		RCW-3267	N750-S1 47	TCN-47	C10Q47U	TCT-47	NT-5447	STCU-Q47	N750 5%
C14	1 3		RCK-035							10% ③
C15	1 5		RCW-3220							
C16	10000		RCW-3186	BPD-01	DD-103	BYA8S1	ED-01	DC5I1	5HK-S1	
C17	30		RCW-3006		TCC-30	C30Q5C	TCO-30			NPO 5%
C18	2 0		RCK-030	NPO-S1 2. 3	TCS-2R3	C2V3C	TCO-2. 3			5%
C19	.0		RCW-3248							5% N330
C20	3		RCW-3247							N80 5%
C21	1000		RCW-3269	EF-001	MFT-1000				503C-D1	
C22	1000		RCW-3269	EF-001	MFT-1000				503C-D1	
C23	1000		RCW-3269	EF-001	MFT-1000				503C-D1	
C24	1000		RCW-3269	EF-001	MFT-1000				503C-D1	
C25	1000		RCW-3183	BPD-001	DD-103	BYA8D1	ED-1000	DC5I1	5HK-D1	10%
C26										④
C27	1000		RCW-3269	EF-001	MFT-1000				503C-D1	
C28	1000		RCW-3183	BPD-001	DD-103	BYA8D1	ED-1000	DC5I1	5HK-D1	10%
C29	1000		RCW-3323	BPD-001	DD-103	BYA8D1	ED-1000	DC5I1	5HK-D1	10%
C30	20		RCW-3173	NPO-S1 20	TCZ-20	C10Q2C	TCO-20	ZT-543	STCC-Q2	NPO 5%
C31	800		RCW-3247							
C32	047	200	RCC-140	P288N-047	DF-S03	CUB3S47		GSM-4147	ETM-047	10%
C33	750		RCW-3211							
C34	800		RCC-140							
C35	800		RCC-142							
C36	680		RCW-3321				ED-680			10%
C37	820		RCW-3052							10%
C38	800		RCC-142							
C39	4		RCW-3155			C10V4C				NPO 5%
C40	5		RCW-3067	NPO-S1 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	STCCB-V5	5%
C41	900		RCW-3047							
C42	047	200	RCB-015							10%
C43	10000		RCW-3186	BPD-01	DD-103	BYA8S1	ED-01	DC5I1	5HK-S1	②
C44	10000		RCW-3186	BPD-01	DD-103	BYA8S1	ED-01	DC5I1	5HK-S1	②
C45	33		RCW-3169	NPO-S1 33	TCZ-33	C10Q33C	TCO-33	ZT-5433	STCC-Q33	NPO 10%
C46	47		RCW-3267	N750-S1 47	TCN-47	C10Q47C	TCT-47	NT-5447	STCU-Q47	N750 10%
C47	.	600	RCW-3266							10%
C48A	10000	1000	RCW-3264	DAC-27	DD6-103	HVE16S1		GEM-1621	BL-S10	⑫
B	10000	1000		DAC-27	DD8S-103	HVE16S1		GEM-1621	BL-S10	⑫
C49	800		RCW-3037							
C50	20		RCW-3173	NPO-S1 20	TCZ-20	C10Q2C	TCO-20	ZT-543	STCC-Q2	NPO 5%
C51	1900		RCW-3185							10%
C52	5000		RCW-3014	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C53	800		RCW-3037							
C54	10000		RCW-3350	BPD-01	DD-103	BYA8S1	ED-01	DC5I1	5HK-S1	
C55	20000		RCW-3341	BPD-02	DD-203	BYB8S2	ED-02		5HK-S2	
C56	18	200	RCB-052							10%
C57	5000		RCW-3014	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C58	15	400	RCB-040							④ 10%
C59	0039	600	RCC-142							① 10%
C60	022	600	RCB-051							10%
C61	022	600	RCB-051							10%
C62	033	600	RCB-058							10%
C63	018	1000	RCB-050							10%
C64	900		RCW-3184	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	③
C65	47		RCW-3267	N750-S1 47	TCN-47	C10Q47U	TCT-47	NT-5447	STCU-Q47	N750 10%
C66	7		RCW-3267				ED-82			NPO 10%
C67	1200		RCW-3187				ED-1200			10%
C68	620		RCW-3280							10%
C69	750		RCW-3281				ED-750			10%
C70	5000		RCW-3274							10%
C71	18	200	RCB-053							10%
C72	910		RCU-347	1644-00081		1R5TR				5%
C73	0082	600	RCB-049							10%

CAPACITORS (cont)

ITEM No	RATING CAP	RATING VOLT	G. E. PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No.	REPLACEMENT DATA ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C74	560		RCW-3282				ED-560			10%
C75	5000		RCW-3274							10%
C76	1	600	RCC-142	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C77	160	2000	RCW-3255							N1600 10%
C78	260	4000	RCW-3367							5 N1600 10%
C79	356	600	RCW-064							10% ④
C80	500	2000	RCW-3339		TV-20		413-1			
C81	800		RCW-3037							
C82	800		RCW-3037							
C83	800		RCW-3037							
C84	800		RCW-3037							
C85	800		RCW-3037							
C86	800		RCW-3037							
C87	20000	1400	RCW-3242	P688N-02				GEM-1612		⑪
C88	10000	1400	RCW-3295	DAC-27	DD8-103	HVE16S1		GEM-1611	BL-S10	⑫
C89	5000	1400	RCW-3246	DAC- 9	DD16-502	HVE16D5		GEM-1625	BL-D50	⑫
C90	1000	1400	RCW-3231	DAC-2	DD20-102	BYA10D1M		GEM-1621	BL-D10	⑫

① Some versions use a .36MMF in this application.
② Some versions use a .33MMF in this application.
③ Some versions use a1.0MMF in this application.
④ Not used in some versions
⑤ Some versions use a 270MMMF 10% 4KV N1600 Ceramic in this application (Part #RCW-3240)
⑥ Some versions use an 800MMF 500V in this application (Part #RCW-3037).
⑦ Late production versions use .0039MFD 1000V (Part #RCB-053) in this application.
⑧ Late production versions use 800MMF 1000V (Part #RCW-3274) in this application.
⑨ Late production versions use .022MFD 600V (Part #RCN-092) in this application.
⑩ Late production versions use separate units. C48A becomes .018MFD 1000V (Part #RCN-107) and C48B remains same value (Part #RCW-098).

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	G E PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	INSTALLATION NOTES
R1	500K		RRC-378					Volume & Switch
R2A	200K		RRC-431					Brightness
B	3Meg							Vert. Lin.
R3A	1.5Meg		RRC-430					Vert. Hold
B	400K							Height
R4	15K		RRC-429					Contrast - Tap ⑤ 10K
R5A	1Meg		RRC-395	AB-69	A4T-1Meg-S	Q11-137	PTA1254L	Horiz. Hold
B	Shaft			AK-19	RN-3	TQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING OHMS	RATING WATT	G. E. PART No	NOTES
R6	12K			
R7	22K			
R8	10K			
R9	15K			
R10	27K			
R11	220K			
R12	15K			
R13	82000			Note 1
R14	10K	2		
R15	2 2Meg			
R16	1 8Meg 5%			
R17	22Ω			
R18	75000 5%			
R19	2 2Meg			
R20	47Ω			
R21	47Ω			
R22	15K			Note 2
R23	470K			
R24	470K			
R25	33K 5%			
R26	22Meg			
R27	18Meg			
R28	2200			
R29	100Ω			
R30	220Ω			
R31	180Ω			
R32	39000Ω			Note 3
R33	150K 5%			Note 13
R34	22K			
R35	1Meg			
R36	22K			
R37	1000Ω			
R38	2200Ω			
R39	47K			Note 4
R40	2 2Meg		RRD-007	Note 5
R41	1 2Meg			Note 6
R42	100K			
R43	220K			Note 7
R44	53000Ω			Note 8
R45	180Ω			

ITEM No	RATING OHMS	RATING WATT	G. F. PART No	NOTES
R46	22K			
R47	330Ω	1		
R48	10Meg 5%			
R49	3.3Meg			
R50	3.9Meg			
R51	330K			
R52	150K			
R53	820K			
R54	2 7Meg			
R55	33000Ω			Note 1
R56	1Meg			
R57	56K			
R58	68K			
R59	47K			
R60	22000Ω			
R61	22000Ω			
R62	15K			
R63	5 5Meg 5%			
R64	100K 5%			
R65	390K			
R66	560K			
R67	1 2Meg			
R68	56K			
R69	15K	1		
R70	39K			
R71	820K			
R72	47K			
R73	27K			
R74	100K			
R75	12000 5%			
R76	1000			
R77	820K			
R78	10K	2		
R79	2.2Ω			
R80	5600Ω	7	RRW-173	
R81	60	15		
R82	4Ω	25	RRW-148	
R83	22K			
R84	75Ω 5%			

Note 1. Some versions may use a 47000Ω in this application.
Note 2. Some versions may use a 18K in this application.
Note 3. Some versions may use a 33000Ω in this application.
Note 4. Some versions may use a 82K in this application.
Note 5. Some versions may use a 4.7Meg in this application.
Note 6. Some versions may use a 2.2Meg in this application.
Note 7. Some versions may use a 180K in this application.
Note 8. Some versions may use a 68000Ω in this application.
Note 9. Some versions may use a1.5Meg in this application.
Note 10. Some versions may use a 12K, 2W in this application.
Note 11. Some versions may use a 18K, 5%, 1W in this application.
Note 12. Late versions use 5100Ω, 7W (Part #REW-176) in this application.
Note 13. Late production models use 270K in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA G. E. PART No.	Hallderson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	RTO-313	Z1807 ①	A-3037	V315 ①	VO-101 ②	26676 ①	119X	
T2A	Yoke-Horiz. (12. 6MH)	RLD-080		MDF-108					
B	(DPP)-Vert. (43MH)								
T3	Horiz. Output	RTO-208							

① Cut and tape blanking lead.
② Drill new mounting hole(s).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	G. E. PART No.	Hallderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	2400Ω	3-4Ω	RTO-213	Z1101	A-3025	A-3322	24S53	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V C IMP	REPLACEMENT DATA G E PART No	REPLACEMENT DATA QUAM PART No	NOTES
SP1	4" 8"	PM PM	3-4Ω	ROP-035 ① S-8250T ②	4A07	1 Used in Models 17P1328, 29, 31, 21T1439 2 Used in Model 21C1449

COILS (RF-IF)

ITEM No.	USE	G. E. PART No.	NOTES
L1	Ant. Trans.	RLA-046	
L2	Ant. Coils	RBX-092	Channel 2-13. Includes wafer assembly
L3	RF Coils	RBX-093	Channel 2-13. Includes wafer assembly
L4	Mixer Grid Coils	RBX-094	Channel 2-13. Includes wafer assembly

ITEM No.	USE	G. E. PART No.	NOTES
L5	Osc. Coils	RBX-095	Includes wafer assy. and rotor Channel 6 Channel 13
L6	Osc. Coil	RLL-373	
L7	Osc. Coil	RLL-417	
L8	RF Choke	RLL-444	
L9	Mixer Plate Coil	RLL-374	

ITEM No.	USE	REPLACEMENT DATA G. E. PART No.	MEISSNER PART No.	MERIT PART No	MILLER PART No	NOTES
L10	47.25MC Trap	RLL-435				
L11	RF Choke	RLL-360				.1 Microhenry
L12	1st. Video IF	RLL-348				
L13	2nd. Video IF	RTL-216				
L14	3rd. Video IF	RTL-217				
L15	4th. Video IF	RLL-434				Includes assembly
L16	RF Choke	RLL-448 ①	10-1000			.82 Microhenry, IRC Part #CLA
L17	RF Choke	RLL-301				.33 Microhenry
L18	RF Choke	RLL-340 ②				5.6 Microhenries, IRC Part #CLA - Note
L19	RF Choke	RLL-340				5.6 Microhenries, IRC Part #CLA - Note
L20	Shunt Peaking Coil	RLL-430 ③				560 Microhenries
L21	Series Peaking Coil	RLL-307				100 Microhenries
L22A	4.5MC Trap	RLL-413				
B	Sound IF					
L23	Shunt Peaking Coil	RLL-446 ④				750 Microhenries
L24	Series Peaking Coil	RLL-445 ③				270 Microhenries
L25	Ratio Det.	RTD-030			6306-PC *	Includes 220Ω resistor
L26	RF Choke	RLL-453				10 Microhenries, IRC Part #CL-4
L27	Line Choke	RLL-420				180 Microhenries
L28	Fil. Choke	RLL-085				2.2 Microhenries, IRC part #CLA
L29	Fil. Choke	RLL-085				2.2 Microhenries, IRC part #CLA

① Some versions may use part #RLL-423 (1.2 Microhenries).
② Some versions may use part #RLL-450 (7.5 Microhenries).
③ Some versions may use part #RLL-451 (560 Microhenries) or RLL-455 (470 Microhenries).
④ Some versions may use 820 Microhenries or part #RLL-457 (680 Microhenries).
⑤ Late versions use part #RLL-454 (300 Microhenries).
Note. Not used in some versions.
* Connect 220Ω resistor to tertiary winding

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI	DC RES SEC.	G. E. PART No.	Meissner PART No	Merit PART No	Miller PART No	Ram PART No	Thordarson PART No	NOTES
L30	75Ω		RLL-431						Horiz. Freq.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ^(-6)	G. E. PART No.	Hallderson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
L31	.250A	37Ω	1 HY.	RLF-079	C3087 ①	C-3974 ①	C-2336 ①	28C44 ①	C-27X

① Drill one new mounting hole.

GENERAL ELECTRIC MODELS 17P1328, 29, 30, 31, 21C1449, 50, 21T1439 (M3 Line)

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K1	Antenna Isolation	470MMF @ 1500VAC , .3-1Meg	RCR-002	Centralab RC-471 Sprague R-9177
K2	Antenna Isolation	470MMF @ 1500VAC, .3-1Meg	RCR-002	Centralab RC-471 Sprague R-9177
K3	Sync Couplate	470MMF, 470K	RCR-003	Centralab RC-465 Sprague R-9176
K4	De-Emphasis	1000MMF, 10000MMF, 4000MMF, 22K	REK-012	Centralab PC-186 Sprague PB-3
K5	Audio Output	10000MMF, 10000MMF, 6.8Meg, 510K, 1000Ω, 470K, 680K	REK-021	
K6 A	Vert. Integrator	800MMF, 2000MMF, 15K, 68K, 100K	REK-013	
B	Vert. Integrator	800MMF, 2000MMF, 68K, 100K	REK-025	Used in late productions
K7	Chassis Isolation	470MMF @ 1500VAC, 1Meg	RCR-006	Sprague R-9193
K8	Chassis Isolation	470MMF @ 1500VAC, 1Meg	RCR-006	Sprague R-9193

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	G. E. PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.230A	RER-015 ①	1356C ①	1N1007 ②	RS300SL ①	300 ①	① Selenium type.
M2	.230A	RER-015 ①	1356C ①	1N1007 ②	RS300SL ①	300 ①	② Germanium type.
M3		RED-006 ②			1T1 ①		
M4		RED-006 ②			1T1 ①		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			G. E. PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	N	2A 125V S/B	REF-033	RJW-006	333002. (N 2A 125V S/B)	346017	N2	HN 13/4 to 2 1/2

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		G. E. PART No.	CBS PART No.	SYLVANIA PART No.	
M6		RED-001	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M7	Tuner	RJX-101	VHF, 12 position
	Tuner	RJX-106	VHF, 13 position
	Tuner	RJX-107	VHF, 12 position
	Tuner	RJX-108	VHF, 13 position
	Tuner	RUX-023	UHF, with tube and crystal
M8	Centering Device	REA-019	
M9	Ion Trap	RET-016	Used with 17BRP4 picture tube
	Ion Trap	RET-017	Used with 12CZP4 picture tube
	Ion Trap	RET-018	Used with 17CKP4 or 21DEP4 picture tube

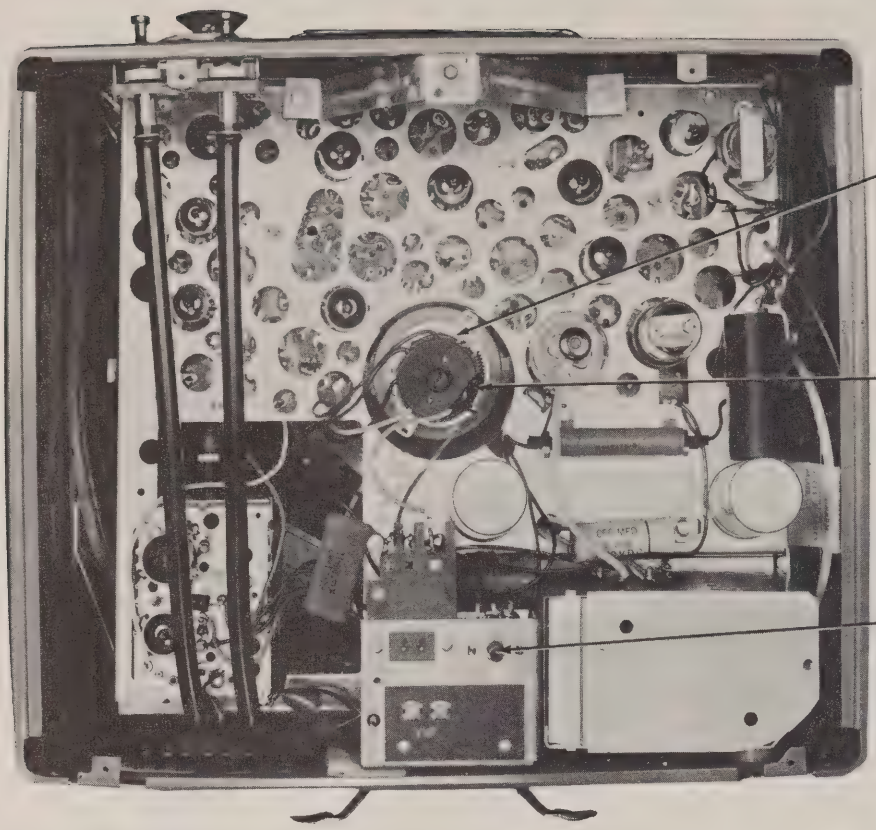
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	RDW-126	Plastic, Models 17P1329, 30, 31
Safety Glass	RDW-129	Tempered Glass, clear, Model 21T1439
Safety Glass	RDW-130	Tempered Glass, Tinted, Model 21C1449
Mask	RDM-081	Picture tube, Models 21T1439, 21C1449
Knob	RDK-644	VHF Channel Selector, Models 17P1329, 30, 31
Knob	RDK-530	UHF/VHF, Fine tuning
Knob	RDK-659	UHF Indicator, Off-white, Models 17P1328, 29, 30, 31
Knob	RDK-656	UHF Indicator, Brown, Models 21T1439, 21C1449
Knob	RDK-642	On-off, volume, Models 17P1329, 30, 31
Knob	RDK-647	Vertical, brightness, Models 17P1329, 30, 31
Cabinet	RAC-221	Front, Beige &off-white, Model 17P1329
Cabinet	RAC-222	Front, Turquoise & mist green, Model 17P1330
Cabinet	RAC-223	Front, Charcoal & off-white, Model 17P1331
Cabinet	RAC-227	Front, Brown, Model 17P1328
Cabinet	RAV-1053	Beige & Aluminum, Model 17P1329
Cabinet	RAV-1054	Turquoise & Aluminum, Model 17P1330
Cabinet	RAV-1055	Charcoal & Aluminum, Model 17P1331
Cabinet	RAV-1061	Metal, bronze, Model 21T1439
Cabinet	RAV-1062	Masonite, Mahogany, Models 21C1449
Cabinet	RAV-1078	Brown, Model 17P1328
Cabinet	RAV-1076	Masonite, Simulated Oak, Model 21C1450
Cabinet Leg	RAL-034	Mahogany, Model 21C1449
Cabinet Leg	RAL-041	Plastic Oak, Model 21C1450
Handle	RHY-091	Cabinet, Chrome, Models 17P1329, 30, 31
Handle	RHY-093	Cabinet, Brown, Model 17P1328

ALTERNATE TUNER SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

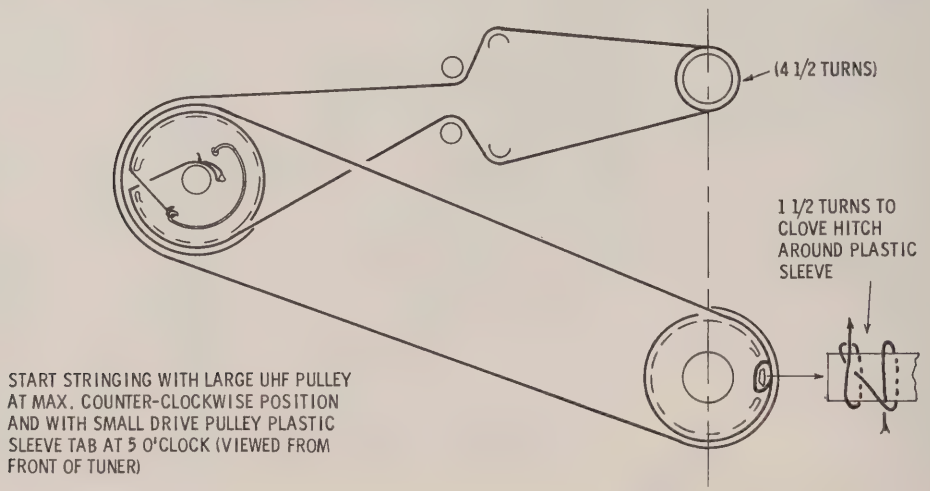
Connect a clip lead from point Ⓛ to Ⓜ.

Connect a 1000Ω resistor across the horizontal frequency coil (L30).

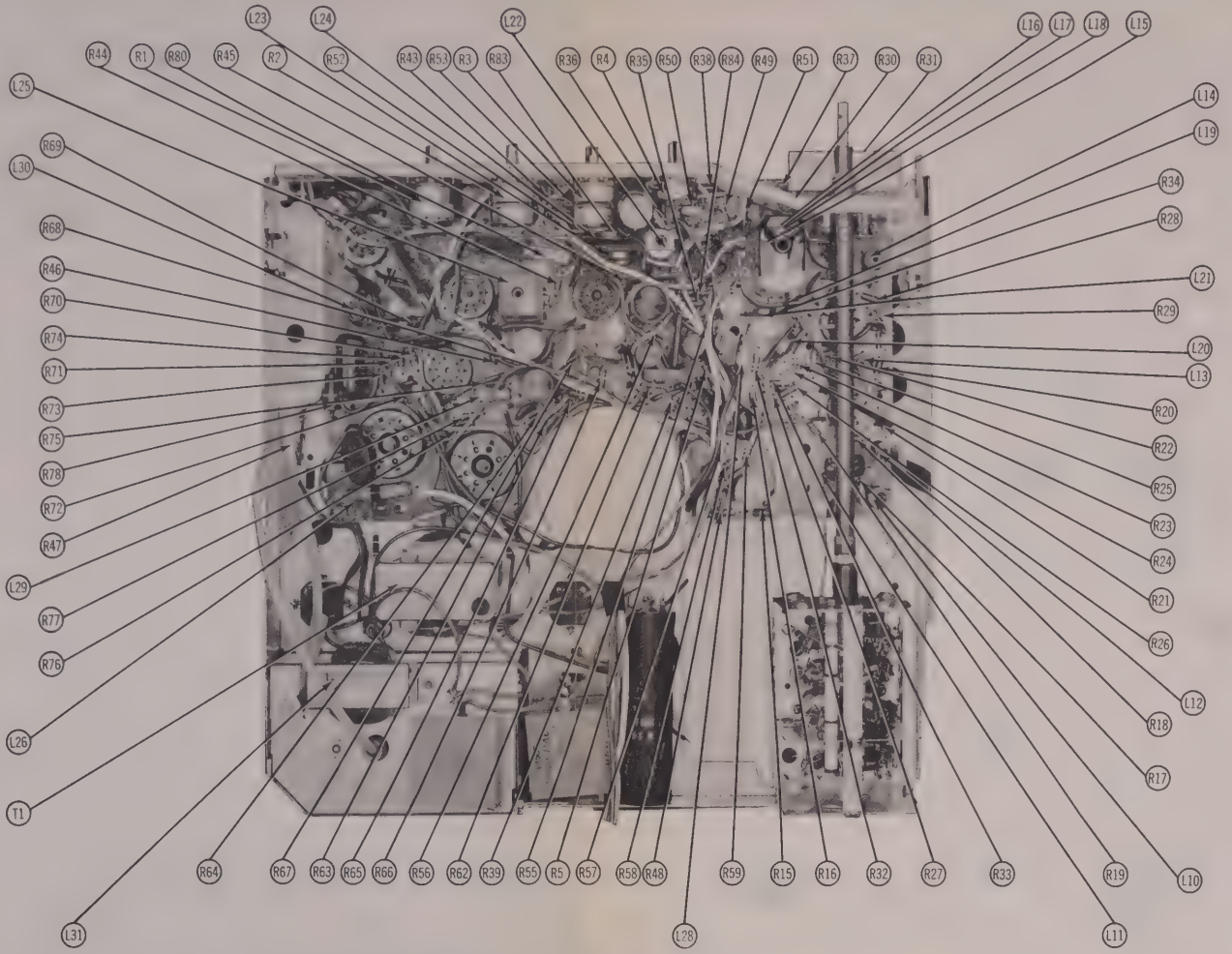
Adjust the horizontal hold control to the point where the picture appears to float back and forth across the screen.

Remove the resistor from across L30 and adjust the horizontal frequency slug (B1) so that the picture again floats back and forth.

Remove the clip lead from points Ⓛ and Ⓜ. Readjust the horizontal control, if necessary.



UHF DRIVE CORD STRINGING



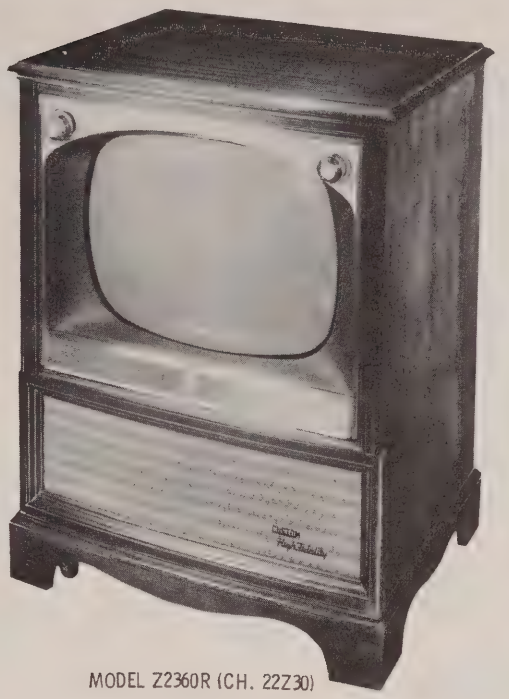
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ZENITH MODELS Z2359EZ, EZU, RZ, RZU, Z, ZU, Z2360RZ, RZU, Z3012HZ, RZ, Z3014HZ, RZ, (Ch. 22Z30, U, Q)

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push-on type knobs from front of cabinet.
2. Remove hex nut on volume control.
3. Remove 9 wood screws and remove rear cover.
4. Remove tuner leads and speaker leads.
5. Remove 2 metal screws from the back of the tuner. Remove tuner.
6. Remove 4 chassis bolts. Remove chassis.



MODEL Z2360R (CH. 22Z30)

TRADE NAME	Zenith	MODELS	CHASSIS
		Z2359EZ, EZU, RZ, RZU, Z, ZU, Z2360RZ, RZU	22Z30, U
		Z3012HZ, RZ, Z3014HZ, RZ	22Z30Q
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois		
TYPE SET	Television Receiver		
TUBES	Twenty-two		
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING 250 Watts, 2.2 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF tuner oscillator circuit, it is necessary to remove the rear cover and supply power to the set. Adjustments are made thru the hole marked "Bulls Eye Adjustment" on the rear of the tuner, and are accessible one at a time as the selector switch is turned to each channel. Set fine tuning control to the center of its range before making adjustments. Use Zenith alignment wrench part #68-31 for adjustment.

PICTURE TUBE SAFETY GLASS CLEANING

Open control panel cover. Slide safety glass channel bracket to the left. Remove bracket. Remove safety glass.

SPECIAL ADJUSTMENTS

A. AGC Control
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Fringe Lock
Turn fringe lock control 1/4 turn from full clockwise position. Adjust the vertical and horizontal hold for picture synchronization and check stability by switching off channel and back again. SLIGHTLY retouch the fringe lock control, if necessary, for maximum stability while testing.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal oscillator coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering arm. Adjust the arm from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

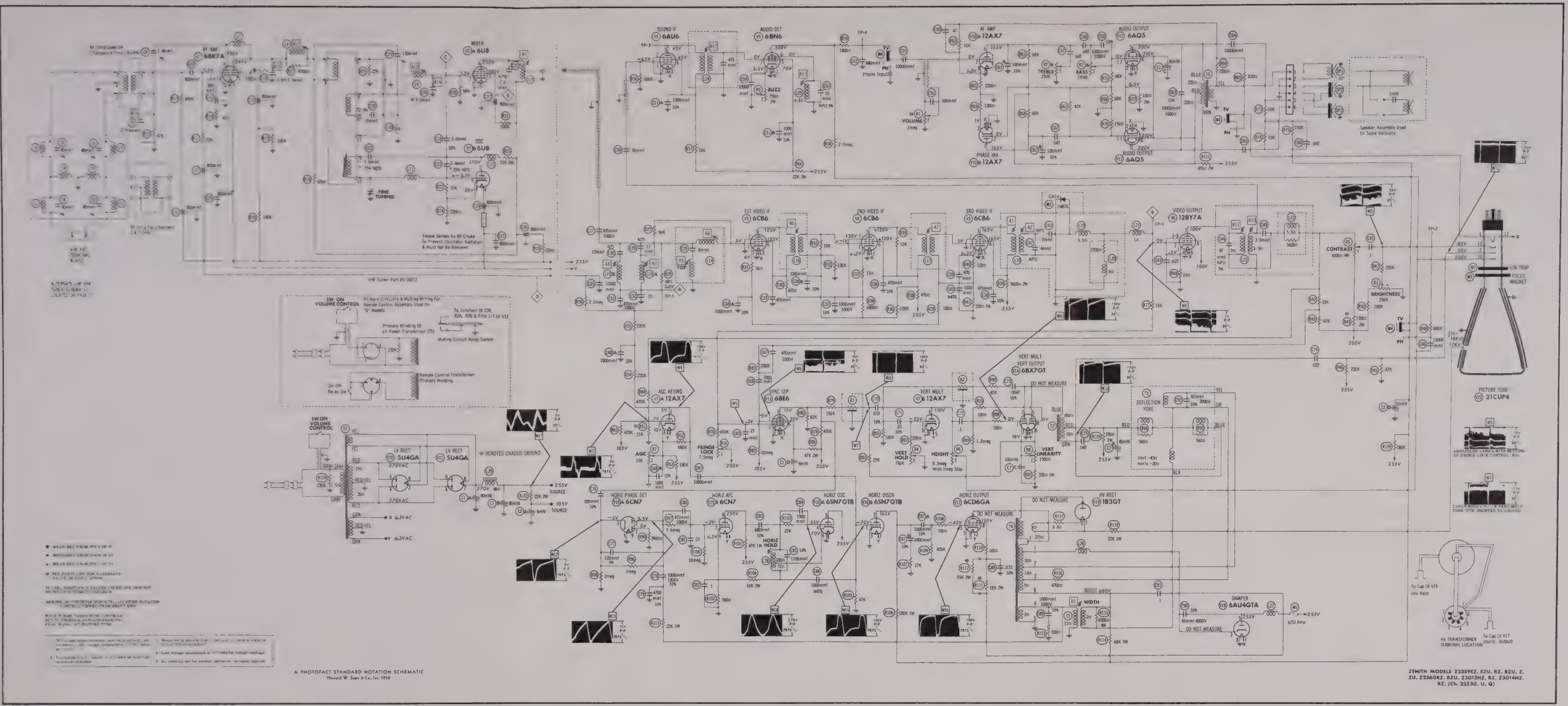
Reduce the picture size so that the sides of the raster are visible. Position the 2 magnets so that all sides are straight.

ZENITH MODELS Z2359EZ, EZU, RZ, RZU, Z, ZU, Z2360RZ, RZU, Z3012HZ, RZ, Z3014HZ, RZ, (Ch. 22Z30, U, Q)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H242

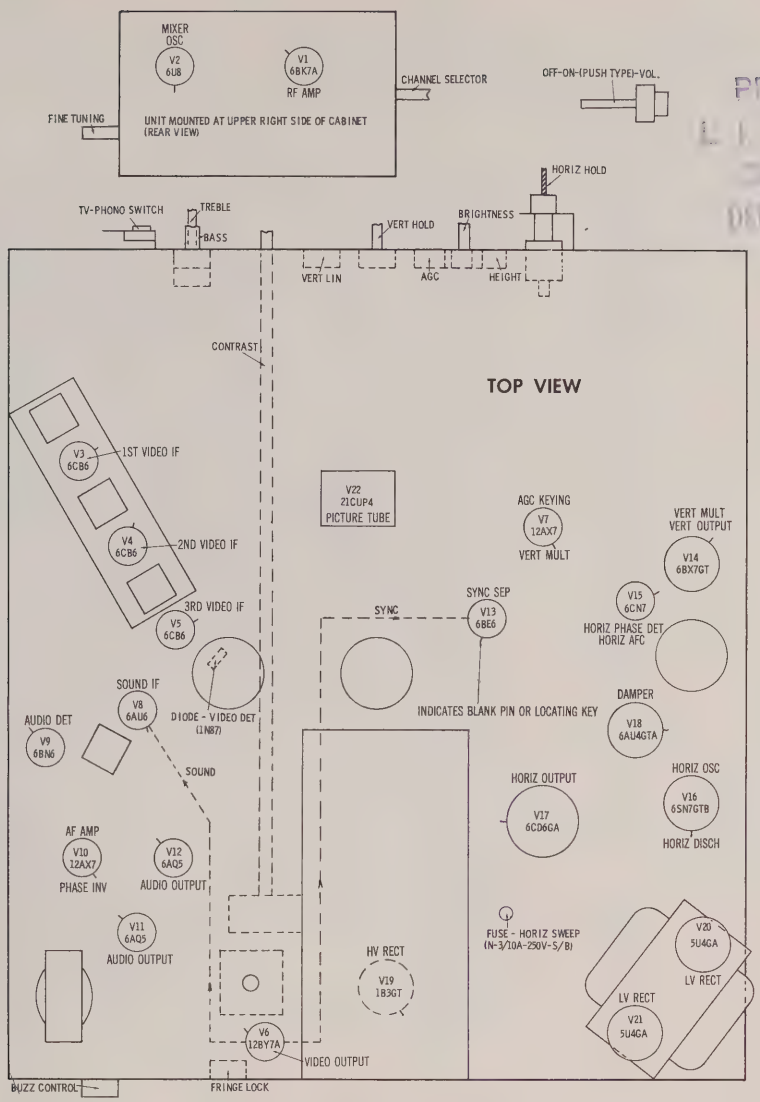
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America


RF AMP 6BK7A
MIXER V2A 6U8
OSC V2B 6U8
FINE TUNING
Sleeve Serves As RF Choke To Prevent Oscillator Radiation & Must Not Be Removed
VHF Tuner Part #5-24712
SOUND IF V1 6AU6
AUDIO DET V9 6BN6
BUZZ
VOLUME 1meg
PH Phone Input
AF AMP V10A 12AX7
PHASE INV V10B 12AX7
AUDIO OUTPUT V11 6AQ5
AUDIO OUTPUT V12 6AQ5
TREBLE 250K
BASS 1meg
TV PH
Speaker Assembly Used In Some Versions
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
CATH M2 1N87G
VIDEO OUTPUT V6 12BY7A
CONTRAST 500Ω 4W
BRIGHTNESS 250K
ION TRAP MAGNET
FOCUS
PICTURE TUBE V22 21CUP4
SW ON VOLUME CONTROL
Primary Circuitry & Muting Wiring For Remote Control Assembly Used On "Q" Models
To Junction Of C59, R2A, R7D & Pins 1-7 Of V12
Primary Winding Of LV Power Transformer (T1)
Muting Circuit Relay Switch
Remote Control Transformer Primary Winding
On-Off Relay Sw
AGC KEYING V7A 12AX7
SYNC SEP V13 6BE6
VERT MULT V7B 12AX7
VERT MULT VERT OUTPUT V16 6BX7GT
DO NOT MEASURE
VERT HOLD 750K
HEIGHT 8.5meg With Ireay Stop
VERT LINEARITY 1500Ω
DEFLECTION YOKE
Vert -43Ω Horiz -20Ω
AMPLIFIER CABLE WITH SETTING OF FRINGE LOCK CONTROL R80
TAKE OFF POINT FOR FAULT MUST TUBE (VT) SHORTED TO GROUND
FRINGE LOCK 7.5meg
HORIZ PHASE DET V15A 6CN7
HORIZ AFC V15B 6CN7
HORIZ OSC V14A 6SN7GTB
HORIZ DISCH V14B 6SN7GTB
HORIZ OUTPUT V17 6CD6GA
HV RECT V19 1B3GT
HORIZ HOLD
BOOST 680V
WIDTH
DAMPER V18 6AU4GTA
6/10 Amp
LV RECT V20 5U4GA
LV RECT V21 5U4GA
270VAC
270VAC
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
105V SOURCE
105V SOURCE
X 6.3VAC
Y 6.3VAC
To Cap Of V19 (HV Rect)
To Cap Of V17 (Horiz. Output)
HV TRANSFORMER TERMINAL LOCATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ZENITH MODELS Z2359EZ, RZU, RZ, RZU, Z, ZU, Z2360RZ, RZU, Z3012HZ, RZ, Z3014HZ, RZ, (Ch. 22Z3Q, U, Q)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

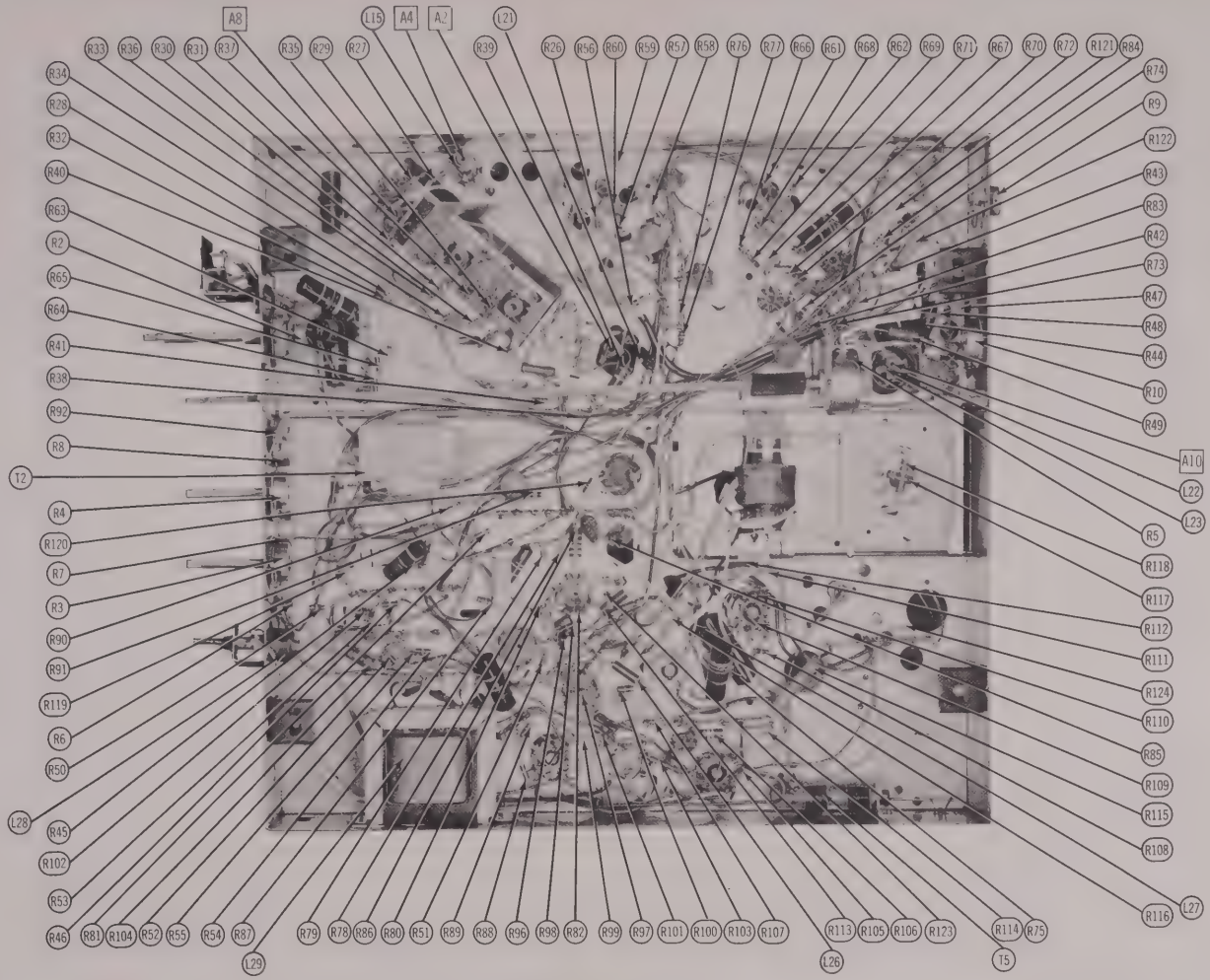
POWER SUPPLY FAILURE
No raster, no sound - **V20, V21**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V7, V22**
Has pic, no sound - **V8, V9, V10, V11, V12**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V7, V13**
No horiz. sync - **V13, V15, V16**
No vert. or horiz. sync - **V13**

SWEEP FAILURE
No raster, has sound - **V15, V16, V17, V18, V19, V22, Fuse (M1)**
No vertical deflection - **V7, V14**
Poor vert. linearity or foldover - **V7, V14**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V20, V21**
Vert. off freq. - **V7, V13, V14**
Horiz. off freq. - **V13, V15, V16**

PROPERTY OF
DENVER, COLORADO



CHASSIS BOTTOM VIEW - RESISTOR INDUCTOR & ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a bias supply that may be varied from negative 3 volts to positive 3 volts, to point (A). Common to chassis.
Use only enough signal input to provide no more than 3 volts peak to peak output on the scope with bias adjusted for 2 volts at point (A).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470MMF	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	43.5MC (10MC Swp)	39.75MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point (B). Low side to chassis.	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1. with markers as shown. If proper response cannot be obtained, check to see that the two cores are entering their respective windings from opposite ends of the coils.
2.	"	High side to point (C). Low side to chassis.	"	47.25MC	"	"	A3	Reduce bias and use maximum scope gain to observe trap notches. Adjust to place marker in trap notch. (See Fig. 2).
3.	"	"	"	39.75MC	"	"	A4	"
4.	"	"	"	41.25MC	"	"	A5	"
5.	"	"	"	41.25MC 45.0MC 45.75MC	"	"	A6, A7, A8, A9	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A6 affects low frequency side of curve and A7 affects high frequency side.

SOUND IF ALIGNMENT

Connect an attenuator (Zenith S-17203 or equivalent) in series with the antenna. Tune in a modulated TV signal and adjust the attenuator until the signal is below the limiting level of the 6BN6 as evidenced by a hiss similar to super regeneration in the sound. Adjust A10, A11, A12 and A13 for maximum sound and best quality. Adjust the buzz control (R9) for MINIMUM buzz. If the hiss disappears during the alignment, further reduce the signal until the hiss returns.

VHF OSCILLATOR ALIGNMENT

Set the fine tuning to the approximate center of its range. The oscillator adjustment screws are accessible one at a time thru the back of the tuner as the station selector is rotated. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of 2 volt bias supply to point (D). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	50Ω to 300Ω Matching Trans.	Across VHF antenna terminals thru matching transformer	69MC (10MC Swp)	67.25MC 71.75MC	4	Vert. Amp. thru 10K to point (E). Low side to chassis.	A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown.
7.	"	"	201MC	199.25MC 203.75MC	"	"	A17, A18	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown. Repeat steps 6 and 7 until best overall symmetry is obtained.

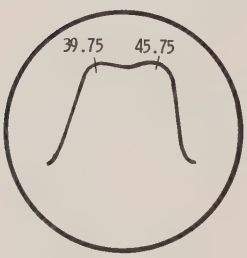


FIG. 1

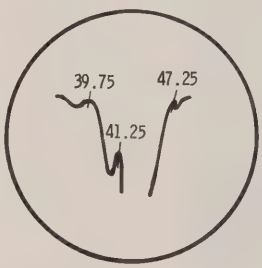


FIG. 2

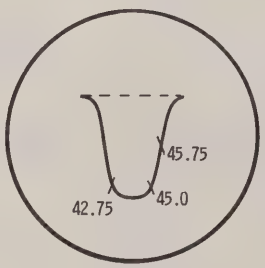


FIG. 3

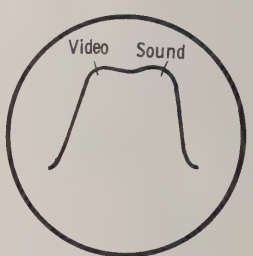


FIG. 4

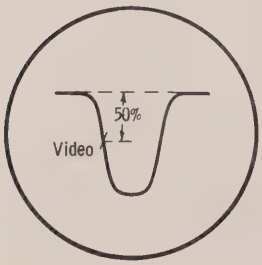


FIG. 6

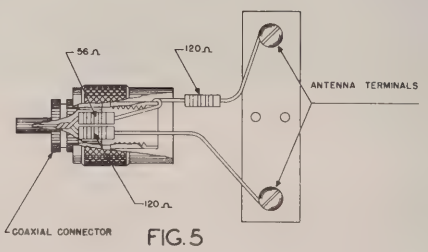


FIG. 5

ALIGNMENT INSTRUCTIONS (cont)

UHF TUNER ALIGNMENT

Alignment of the UHF tuner should not be attempted without the proper test equipment.
Connect the negative lead of a 2 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Fig. 5	Across UHF antenna terminals thru matching network (Fig. 5).	713MC	711.25MC	54	Vert. Amp. thru 10K to point (B). Low side to chassis.	A19, A20, A21	With the UHF tuning knob set to channel 54, the rocker arm on the tuner should be in the horizontal position. If necessary, loosen set screw and turn the shaft independently of the pulley until the arm is in the horizontal position with the channel indicator on channel 54. Tighten the set screw. If the calibration is off more than 3 channels, adjust A19 to place video marker at 50% on curve as in Fig. 6. The image (weaker response) will appear also. The response toward counter clockwise position of A19 is the proper response. Adjust A20 and A21 for maximum amplitude of response similar to Fig. 6.
9.	"	"	473MC	471.25MC	14	"		Check for response similar to Fig. 5. If the oscillator is off more than 3 channels, adjust oscillator travel adjustment (osc., mixer and antenna travel adjustments are the three hex nuts on top of the UHF tuner next to the tuner chassis) to scale. Care must be used when making the adjustment so as not to move the rocker arm out its bearing. Set the mixer and antenna travel adjustments for maximum response on scope.
10.	"	"	887MC	885.25MC	83	"	A22, A23, A24	Adjust A22 to place marker at 50% on curve similar to Fig. 6. Adjust A23 and A24 for maximum amplitude and symmetry.

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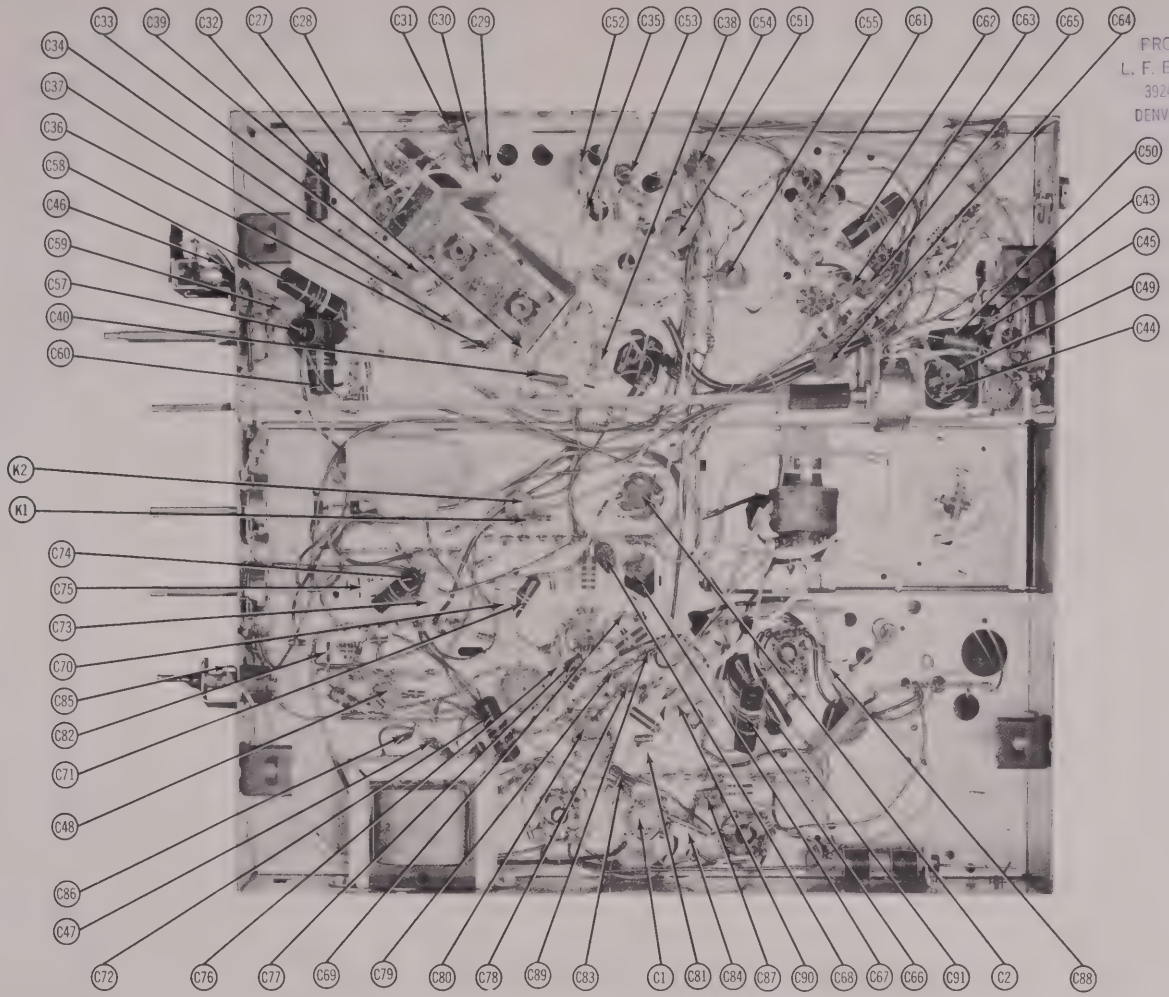
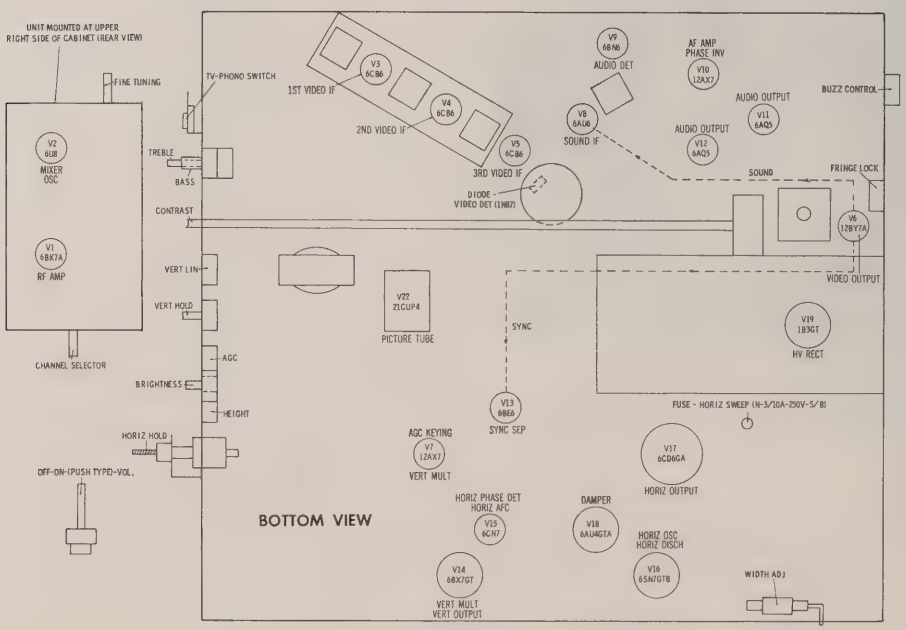


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7A	†690Ω	50K	INF	0Ω	.1Ω	INF	3Meg	47Ω	0Ω
V2	6U8	†10K	68K	100K	.1Ω	0Ω	†220Ω	0Ω	2200Ω	12K
V3	6CB6	1Meg	450Ω	.1Ω	0Ω	▲ 470Ω	▲ 470Ω	0Ω		
V4	6CB6	▲ 6800Ω	▲ 15Ω	.1Ω	0Ω	†470Ω	†470Ω	68K		
V5	6CB6	220Ω	340Ω	.1Ω	0Ω	†5600Ω	†5600Ω	0Ω		
V6	12BY7A	15Ω	2700Ω	15Ω	0Ω	0Ω	.1Ω	†5500Ω	†22K	15Ω
V7	12AX7	†620K	13K	• 5500Ω	.1Ω	.1Ω	• ‡4.5Meg	• 460K	0Ω	0Ω
V8	6AU6	100K	0Ω	.1Ω	0Ω	†32K	†32K	0Ω		
V9	6BN6	• 500Ω	.2Ω	.1Ω	0Ω	†22K	4.8Ω	‡2.7Meg		
V10	12AX7	†68K	50K	1200Ω	0Ω	0Ω	†68K	0Ω	1900Ω	.1Ω
V11	6AQ5	70K	100Ω	.1Ω	0Ω	†690Ω	†470Ω	70K		
V12	6AQ5	110K	100Ω	.1Ω	0Ω	†690Ω	†470Ω	110K		
V13	6BE6	17K	0Ω	.1Ω	0Ω	†70K	†47K	†10Meg		
V14	6BX7GT	1.8Meg	†780Ω	• 550Ω	1.8Meg	†780Ω	• 550Ω	.1Ω	0Ω	
V15	6CN7	3900Ω	2Meg	1Meg	.1Ω	0Ω	560Ω	4Meg	†47K	NC
V16	6SN7GTB	47K	‡250K	0Ω	33K	†0Ω	10K	0Ω	.1Ω	
V17	6CD6GA	TP	.1Ω	0Ω	0Ω	470K	TP	0Ω	†8300Ω	TOP CAP ‡10Ω
V18	6AU4GTA	NC	NC	¶	NC	†.9Ω	NC	0Ω	.1Ω	
V19	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡285Ω
V20	5U4GA	NC	¶	NC	20Ω	NC	19Ω	NC	¶	
V21	5U4GA	NC	¶	NC	20Ω	NC	19Ω	NC	¶	
V22	21CUP4	0Ω	35K	PIN 10 ‡68K	PIN 11 • 280K	PIN 12 .1Ω				

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V18.
▲ MEASURED FROM PIN 7 OF V14.
NC NO CONNECTION.
TP TIE POINT.

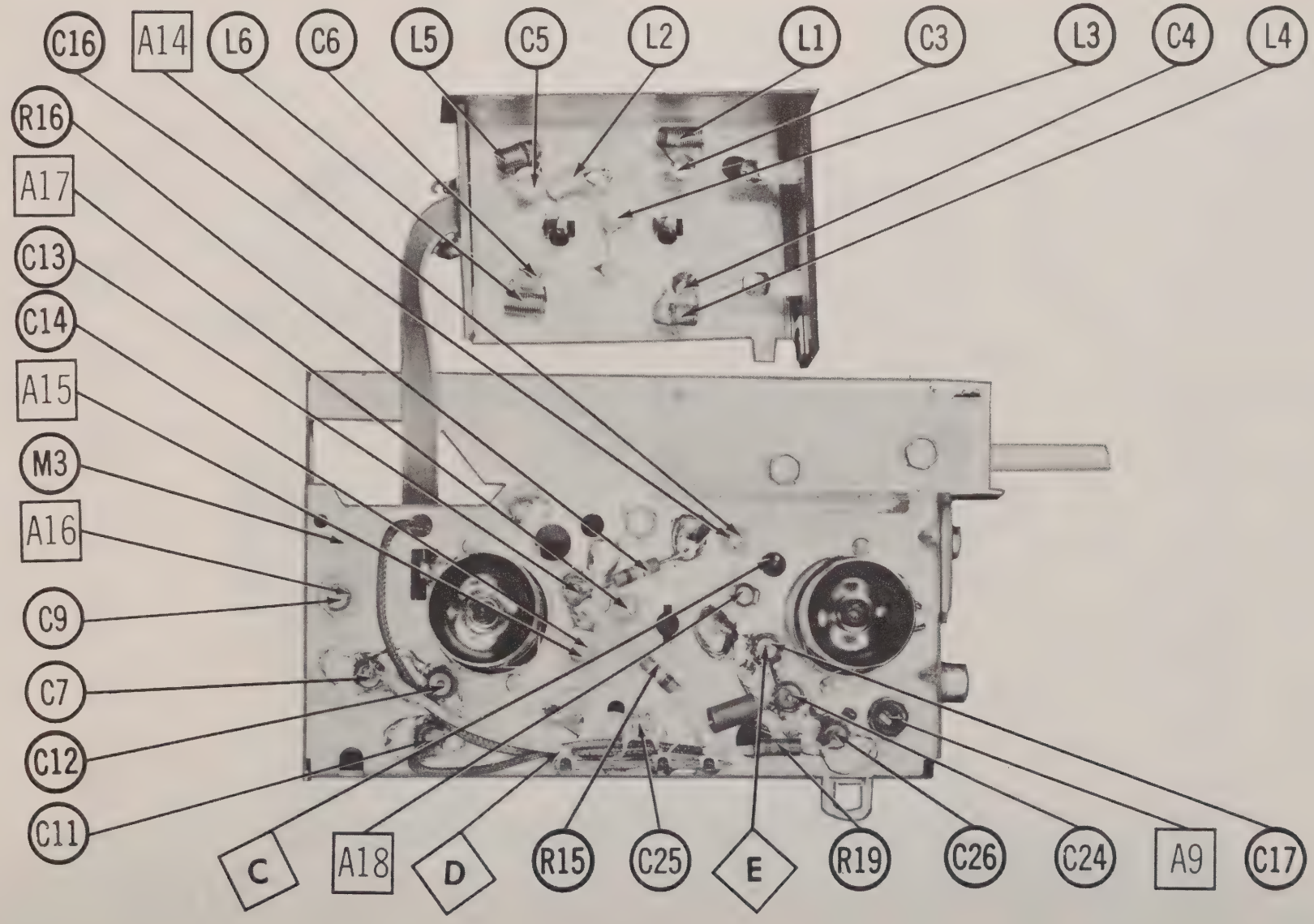


TUBE PLACEMENT CHART

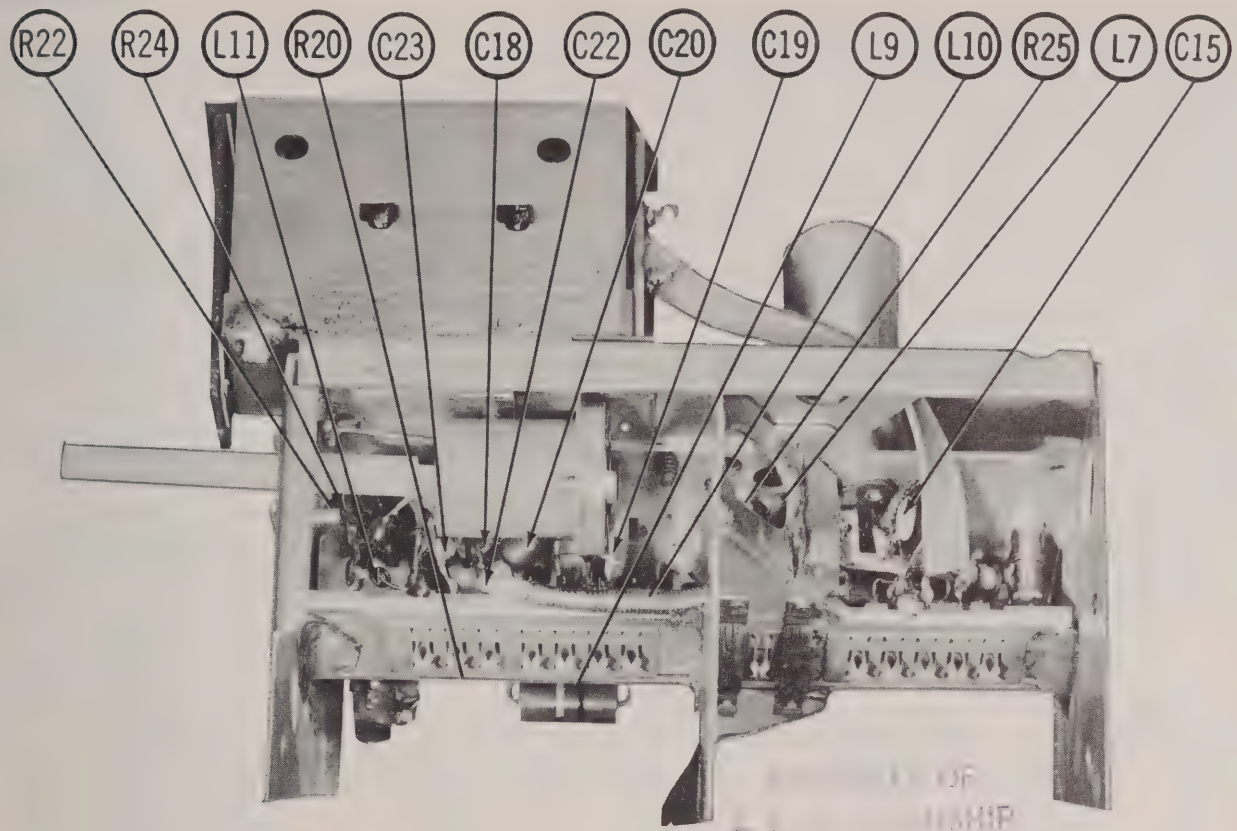
PROPERTY OF
L I [illegible]
DENVER, COLORADO

TP1 0V VIDEO AMP. GRID
TP2 85V PIX TUBE CATHODE
TP3 45V SOUND LIMITER PLATE
TP4 165V AUDIO DET. PLATE
TP5 5.6V AGC

CHASSIS TOP VIEW

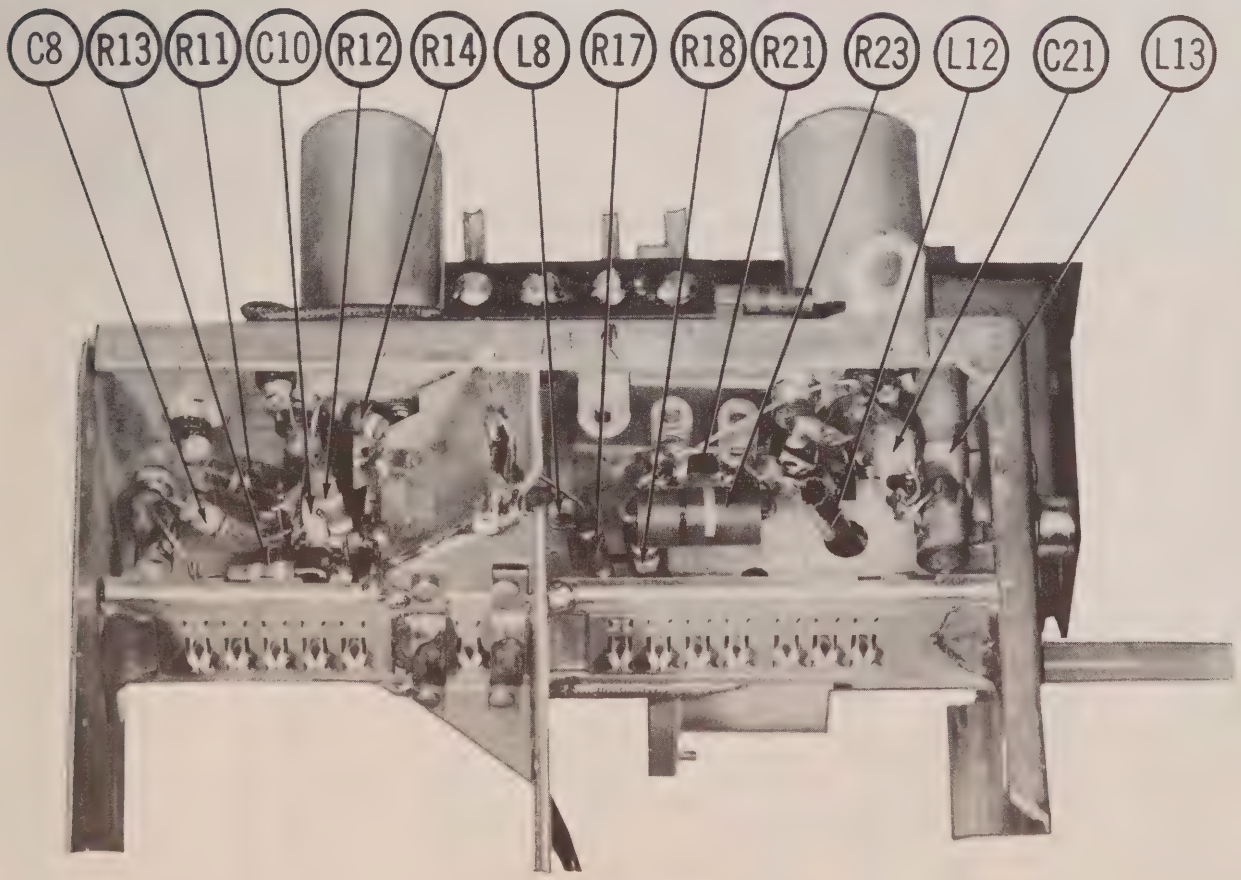


RF TUNER-TOP VIEW



RF TUNER-LEFT SIDE

DENVER, COLORADO



RF TUNER-RIGHT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	6BK7A	
V2	Mixer-Osc.	6U8	
V3	1st Video IF Amp	6CB6	
V4	2nd Video IF Amp	6CB6	
V5	3rd. Video IF Amp	6CB6	
V6	Video Output	12BY7A	
V7	AGC Keying-Vert. Mult	12AX7	
V8	Sound IF Amp	6AU8	
V9	Audio Detector	6BN8	
V10	AF Amp. -Phase Inv	12AX7	
V11	Audio Output	6AQ8	
V12	Audio Output	6AQ8	
V13	Sync Sep	6BE6	
V14	Vert. Mult.- Vert. Output	6BX7GT	
V15	Horiz. Phase Det.- Hrwing. AFC	6CN7	
V16	Horiz. Osc.- Horiz. Disch	6BN7/6TB	
V17	Horiz. Output	6CM6/6LA	
V18	Damper	6AL4GT/A	
V19	HV Rectifier	1B3GT	
V20	LV Rectifier	5U4GA	
V21	LV Rectifier	5U4GA	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V22	21CUP4	21CUP4 [1]	[1] Silver screen -85	

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	400	22-2597	AFH4-40-40	20478	FP378		Q-251	R2489 *
B	80	400			HR435	TC80		MT-4504	
C	430	400							
D	15	350							
C2A	44	350	22-2479	AFH4-120-75	D0965	FP454 §	TMQ-172	Q-442	TVL-4805
B	60	400						MT-4504	
C	100	50							
D	10	475							

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	40		22-3511							5%
C4	40		22-3511							5%
C5	40		22-3511							5%
C6	40		22-3511							5%
C7	800		22-3577							
C8	2.4		22-3596							5%
C9	2.2-5-8		22-3224							
C10	800		22-3331	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C11	800		22-3577							
C12	800		22-3577							
C13	800		22-3577							
C14	55-2.3		22-3453							
C15	800		22-3331	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C16	6-3.0		22-3504							
C17	800		22-3577							
C18	3.9		22-3434							10%
C19	130		22-3581	NPO-SI 130	TCZ-130	C10T13C	TCO-130		STCC-T12	5%
C20	19		22-3606							s. 2.5%
C21	5.0		22-3595							NT50
C22	5.0		22-3499							N220 s. 25%
C23	3.4		22-3592							NPO s. 25%
C24	800		22-3577							
C25	800		22-3331	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C26	800		22-3577							
C27	470	1000	22-6	HVD-15-470	DD-471	BYA10T47	HD15-470	DC30347	5GA-T47	
C28	8		22-3451			C10V8U				
C29	13		22-3579							N75
C30	13		22-3579							N75
C31	470	1000	22-6	HVD-15-470	DD-471	BYA10T47	HD15-470	DC30347	5GA-T47	
C32	.15	300	22-3147	P388N-15		CUB21P15		GEM-3015	2TM-P15	
C33	470		22-16		DS-471		ED-470			10%
C34A	1000		22-3			1R5D1	ED-1000		MS-2I	10%
B	1000					1R5D1	ED-1000		MS-2I	10%
C35	10000		22-3	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C36	470		22-16		DS-471	5R5T47	ED-470			10%
C37	1000	1000	22-17							10%
C38	470		22-3534	1484-00047	DS-471	5R5T47	ED-470		MS-347	10%
C39	470		22-3227	SI 470	DS-471	L7ET47	GP-470	UC-5347	5GA-T47	
C40	1000		22-3112							N470
C41	7		22-3575			C10V7U				NPO
C42	4		22-3560							NPO
C43	.022	300	22-3071	P388N-022	DD-303	CUB4S22	ED-02	GEM-4123	4TM-S22	
C44	47	300	22-3467	NPO-SI 47	TCZ-47	C10Q47C	TCO-47	ZT-5447	STCC-Q47	NPO 5%
C45	.1	300	22-1177	P388N-1		DF-104	CUB2P1	GEM-201	2TM-P1	
C46	10000		22-3	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C47	10000		22-3	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C48A	1000		22-31			1R5D1	ED-1000		MS-2I	10%
B	1000					1R5D1	ED-1000		MS-2I	10%
C49	3.3		22-3243	NPO-SI 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	STCCB-V33	
C50	50		22-3480	SI 50	DS-500	L7EQ5	GP50	UC-545	5GA-Q5	
C51A	1000		22-31			1R5D1	ED-1000		MS-2I	10%
B	1000					1R5D1	ED-1000		MS-2I	10%
C52	680		22-3230	SI 680	DS-681	L7ET68	GP-680	UC-5368	5GA-T68	
C53	10		22-3721	NPO-SI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	STCC-Q1	NPO 5%
C54	10000		22-3	BPD-08	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C55	10000		22-3	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C56	100		22-5	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C57	.047	600	22-1844	P388N-047	DF-503	CUB5S47		GEM-5147	6TM-S47	
C58	.047	800	22-1844	P388N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C59	1000	1000	22-17							10%
C60	.47	300	22-3148	P388N-47		CUB2P47		GEM-2047	2TM-S47	
C61A	100		22-22		DD-101	L10T1	ED-100	ZT-531	MS-31	10%
B	100				DD-101	L10T1	ED-100	ZT-531	MS-31	10%
C62	.047	800	22-1844	P388N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C63	10000	1000	22-17							10%
C64	10000		22-3	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C65	10000		22-3	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C66	.047	600	22-1844	P388N-047	DF-503	CUB5S47		GEM-5147	6TM-S47	
C67	470	1000	22-6	HVD-15-470	DD-471	BYA10T47	HD15-470	DC30347	5GA-T47	
C68	3300		22-11	P388N-0033	DD-332	BYA10D33	ED-0033	UC-5333	5GA-D33	
C69	27		22-3453		DS-270	L7EQ27	GP-27	UC-5427	5GA-Q27	

CAPACITORS (cont)

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C70	033	400	22-3555							10%
C71	01	400	22-3549					GEM-1611		10%
C72	1	400	22-3081	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C73	.0047	600	22-1849					GEM-16247		10%
C74	.022	400	22-3072	P488N-022	DD-303	CUB4S22	ED-02	GEM-4122	4TM-S22	
C75	.047	200	22-1178	P388N-047	DF-503	CUB2S47		GEM-2147	2TM-S47	
C76	100		22-1442	1469-0001	DS-101	2R5T1	ED-100	ZT-531	MS-31	10%
C77	120		22-3305	1469-00015	TCZ-120	2R5T13	TCO-120		MS-312	5%
C78	1000	1000	22-17							10%
C79	4700		22-24			1R5D47			MS-247	10%
C80	470	1000	22-6	HVD-15-470	DD-471	BYA10T47	HD15-470	DC30347	5GA-T47	
C81	01	200	22-1109	P288N-01		DS-103		GP-10000	GEM-411	2TM-S1
C82	.1	200	22-1177	P288N-1		DF-104	CUB2P1		GEM-201	2TM-P1
C83	680		22-2125	1464-00068		DS-681	1R5T68	ED-680		MS-368
C84	1500		22-3889	1467-0015		DS-153	1W5D15	ED-1500	UC-5215	1TM-S15
C85	1100		22-2859	1464-001			1R5D11		MS-211	10%
C86	1000		22-2598							N470
C87A	1000		22-22				22R5D1	ED-1000	MS-21	10%
B	1000						22R5D1	ED-1000	MS-21	10%
C88	033	400	22-3635							10%
C89	1000	1000	22-17							10%
C90	45	4000	22-2858							10%
C91	.1	600	22-1841	P688N-1	DF-104	CUB6P1			6TM-P1	
C92	82	2000								10%

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	53-3571	B-50-S	A47-1Meg-Z		U53	Volume Note 1
B	Shaft			Not Req.	FS-3		Not Req.	
C	Switch			Not Req.	SWE-13		UB-36	
R2A	1Meg	½	53-3578				U53	Bass
B	250K						U53	Treble
R3A	250K	½	53-3573	B-50	A47-250K-S	QU-130	U46	Brightness
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R4A	750K	½	53-3299	B-68	A47-750K-S	QU-156	U54	Vert. Hold
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R5A	5000Ω	4(WW)	53-3301	WW-503	A10-5000			Contrast
B	Shaft			Not Req.	FS-3			
R6A	8.5Meg	½	53-3617	AB-89 *	A47-7.5Meg-S *	QU-143 *	PTA855L	Height with 1Meg stop
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R7A	1M	½	53-3976	AB-30	A47-1M-S	QU-119	TA351-	AGC
B	Shaft			AK-1	FKS-1/2	RQ	Not Req.	
R8A	1500Ω	½	53-3230	AB-9	A47-1500-S	BU-109	PTA152L	Vert. Lin.
B	Shaft			AK-1	FKS-1/4	TMS-121	Not Req.	
R9	750Ω	2(WW)	53-3294		39-800		Not Req.	Buzz
R10A	7.5Meg	½	53-3919	AB-89	A47-7.5Meg-S	QU-143		Fringe Lock
B	Shaft			AK-1	FKS-1/4	RQ		

Note 1 Alternate part #53-3520 may be used in some versions.
* Use a 1Meg resistor in series with right hand terminal.
# Concentritit Equivalent, K-6 Kit, Base Elements & Shafts: B1-137, P13-2T7 (Panel) B13-130, K7-229 (Rear)
■ STA-LOC equivalent FN16L, 062500, RU254A, 1K3000.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING: OHMS	RATING: WATT	ZENITH PART No.	NOTES
R11	22K			
R12	470K			
R13	47K			
R14	47Ω			
R15	100K			
R16	100K			
R17	47000Ω			
R18	470Ω			
R19	220Ω			
R20	68K			
R21	100K			
R22	10K			
R23	10K	2	53-3170	
R24	2200Ω			
R25	22K			
R26	2.2Meg			
R27	56K			
R28	180Ω			
R29	68Ω			
R30	470Ω			
R31	56Ω			
R32	120K			
R33	18K			
R34	68000Ω			
R35	12K			
R36	120K			
R37	15Ω			
R38	470Ω			
R39	5800Ω	2	53-3223	
R40	120Ω			
R41	220Ω 5%			
R42	33K			
R43	47K			
R44	15K			
R45	47K			
R46	220K			
R47	220K			
R48	680K			
R49	1200Ω	2	53-3988	Note 1
R50	100K			
R51	15K			Note 2
R52	680K			
R53	180K			
R54	220K			
R55	220K			
R56	100K			
R57	10K			

ITEM No	RATING: OHMS	RATING: WATT	ZENITH PART No.	NOTES
R58	2.7Meg			
R59	180Ω			
R60	22K	2	53-3141	
R61	68K			
R62	2200Ω			
R63	10K			
R64	2200Ω			
R65	820Ω			
R66	68K			
R67	82K			
R68	68K			
R69	1200Ω			
R70	150K			
R71	68K			
R72	100Ω	2	53-1973	
R73	10K			
R74	10K			
R75	150K			
R76	470K			
R77	15K			
R78	470K			
R79	150K			
R80	82K			
R81	22K			
R82	10Meg			
R83	470K			
R84	470K			
R85	220K			
R86	47K	2	53-1157	
R87	220K			
R88	100Ω			
R89	1.5Meg			
R90	47K			
R91	100K			
R92	2200Ω	1	53-2285	
R93	100Ω			
R94	560Ω			
R95	560Ω			
R96	1Meg			
R97	5.6Meg			
R98	1Meg			
R99	2900Ω			
R100	10Meg			
R101	47K	1	53-1194	
R102	560Ω			
R103	22K			
R104	10K	2	53-3145	

RESISTORS (cont)

ITEM No	RATING: OHMS	RATING: WATT	ZENITH PART No.	NOTES
R105	47K			
R106	1800K	1	53-2313	
R107	27K			
R108	100Ω			
R109	470K			
R110	100Ω			
R111	18K	2		Note 3
R112	15K	2		Note 3
R113	22K	1	53-958	
R114	68K	1	53-1979	
R115	62000Ω	4	53-3602	
R116	4700Ω			
R117	6.8Ω		53-3205	
R118	22K	1	53-1055	
R119	330Ω	1		
R120	180K			
R121	470Ω	7	53-3256	
R122	22K	2	53-1566	
R123	100Ω			
R124	220K		53-3607	

Note 1 Some versions may use a 680Ω resistor in this application.
Note 2. Some versions may use a 330Ω resistor in this application.
Note 3. Some versions may use a single 8200Ω 4W resistor in this application.

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ± 2 2A	520VCT @ 350A	12.5VCT @ 5 9A	95-1471					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	95-1480	Z5901 2	A-3823 2 4	V316 2 4	A-8144 2	28S73 2 3	A-11UX 2	
T3A	Yoke-Horiz. (12.5MH)	95-1509 5	DF605	MDF-91	Y90F12/47	DY-13A	Y-39	1-40 &	
B	(90°)-Vert. (41MH)	6 7	6 7	6 7	5 7	6 7		NW4 7	
T4	Horiz. Output	S-40019			X130 *	A-8275 *	FLY-114 *	D-80 *	
T5A	Width-Series Coil (4-2.4MH)			MWC-10		WC-13 3	WC-24 3	WLC-8	
B	Parallel Coil (3.8-22MH)	S-18748							

1 Connect as autoformer.
2 Use 3 to 1 turns ratio.
3 Drill new mounting hole(s).
4 Cut and tape blanking lead.
5 Includes capacitor C92 and resistors R94 and R95.
6 Use original horizontal network, if necessary with horizontal damping network across terminals #3 and #7.
7 Connect horizontal yoke #3 to horizontal output transformer #3, horizontal yoke #2 and #7 to R118, horizontal yoke #1 to R117 and width coil.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Rom Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
7			1	6	4	6
1			2	5	3	5
2			3	4	2	4
3			4	NC See Note 8	NC See Note 8	NC See Note 8
6			5	3	1	3
4			6	2	5	2
5			7	1	6	1
Special Rules			8	8	8 8	8

8 If the picture is out of phase, reverse AFC winding
9 To reduce yoke "ringing", connect 100Ω, ½ watt in series with capacitor (C92).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	6600Ω CT	3-4Ω	95-1398	22051	A-3904 1	A-3824	22856	S-53X	1 Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	49-784	10A8A	1 Electrostatic
SP2				S-23239 3		3 Used in TV-Radio-Phono Combinations
SP3				S-23239 3		
	3½"	PM	14Ω	49-782 3	3A15T	

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L1	IF Trap Coil	20-490	
L2	IF Trap Coil	20-505	
L3	IF Trap Coil	20-506	
L4	IF Trap Coil	20-490	
L5	IF Trap Coil	20-490	
L6	IF Trap Coil	20-490	
L7	Neut. Coil	20-451	

ITEM No.	USE	ZENITH PART No.	NOTES
L8	RF Coil	20-537	
L9	Mixer Grid Coil	20-538	
L10	RF Coup. Coil	126-764	
L11	Osc. Coil	20-541	
L12	RF Choke	8-18859	
L13	Mixer Plate Coil	S-23702	

ZENITH MODELS Z2359EZ, EZU, EZ, EZU, Z, ZU, Z2360HZ, HZU, Z3013HZ, HZ, Z3014HZ, RZ, (CH, 22230, U, Q)

FOLDER 4

PARTS LIST AND DESCRIPTIONS

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L14	1st. Video IF	S-22502				Includes 41.25MC Trap
L15A	47.25MC Trap	S-40235				
B	39.25MC Trap					
L16	2nd. Video IF	S-17907				
L17	3rd. Video IF	S-19952				
L18	4th. Video IF	S-20623				
L19	Series Peaking Coil	S-17912	19-3093	TV-181	6177	100 Microhenries
L20	Shunt Peaking Coil	S-21562	19-3160 *	TV-184 *	4644 *	160 Microhenries, wound on 2700Ω resistor in series
L21	RF Choke	S-21888	19-1004	BC-565	4610	6.7 Microhenries
L22A	4.5MC Trap	S-24736		TV-120		
B	1st. Sound IF					
L23	Series Peaking Coil	S-21563	19-3125 ▲	TV-195 ▲	6153 ▲	136 Microhenries, wound on 5600Ω resistor
L24	2nd. Sound IF	S-19962				
L25	Quadrature Coil	S-19020	20-1005 ♦	TV-121	1480 ♦	
L26	RF Choke	S-22777	19-1005	BC-566	4612	10 Microhenries
L27	RF Choke	S-22777	19-1005	BC-566	4612	10 Microhenries

* Series 2700Ω resistor. ▲ Parallel 5600Ω resistor. ♦ Drill new mounting hole.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L28	152Ω *		S-19743	19-1577		6324		HS-6	90-110 Millihenries * Tapped @ 52Ω

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L29	.350A	46Ω	2.7 HY.	95-1399					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-5	
K2	Vert. Integrator		87-4	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	6/10A 125V S/B	136-34		333.300 (N 3/10A 125V S/B)	346008	N 3/10	HW 0 to 3/10

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ZENITH PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N87G	103-1	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

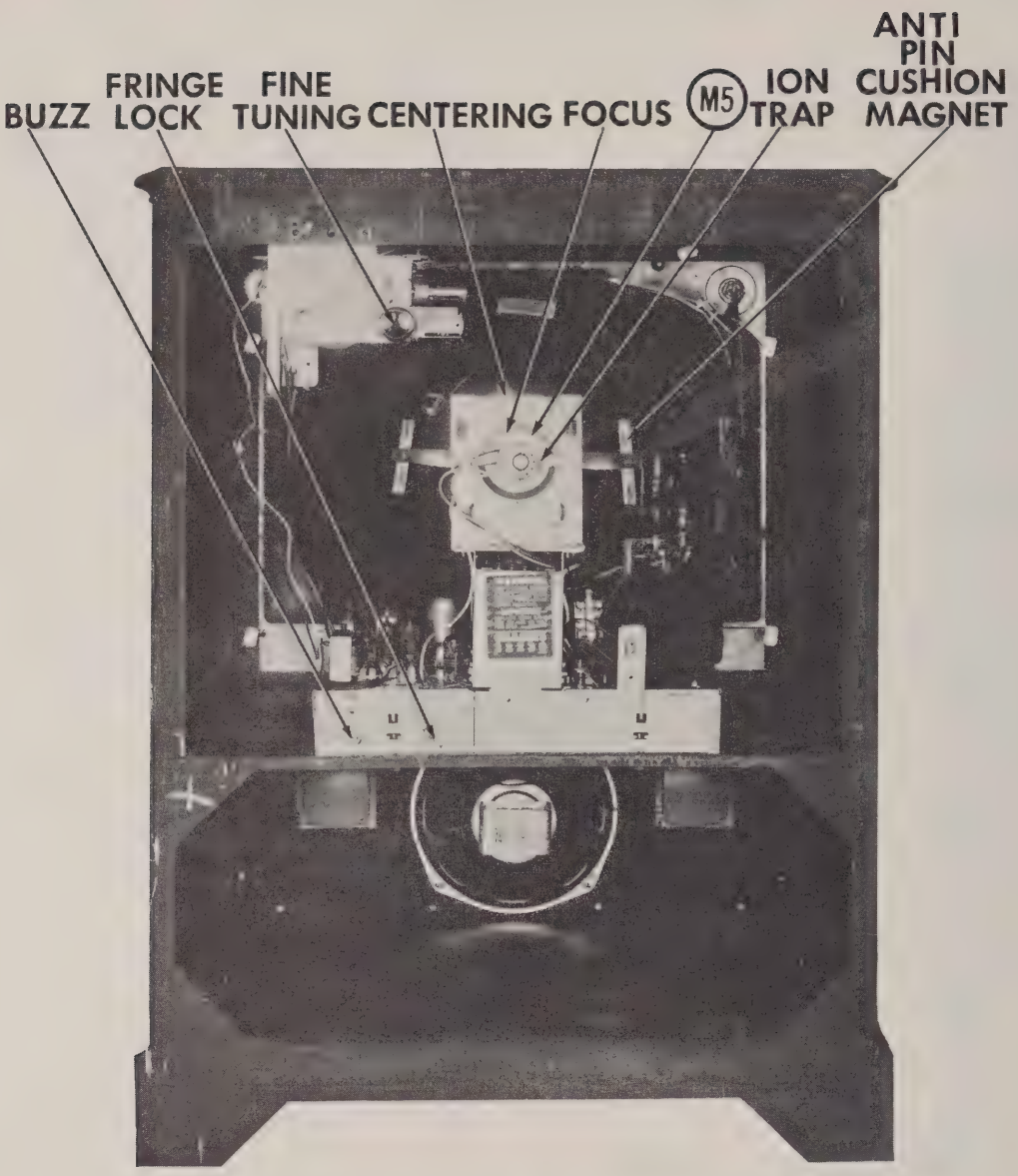
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuner	S-24712	VHF - 12 position - Models Z2360RZ, Z3012HZ, RZ, Z3014HZ, RZ
	Tuner	S-21735	VHF - 12 position - Models Z2360RZ, Z2359Z, EZ, RZ
	Tuner	S-23113	VHF - 13 position - Models Z2360RZ, Z2359Z, EZ, RZ
	Tuner	S-41364	UHF - Models Z2360RZ, Z2359Z, EZ, RZ
M4	Switch	85-555	TV-Phono (Slide type DPDT)
M5	Magnet	S-24358	Includes focus magnet and centering device
M6	Magnet	S-18763	Anti-pin cushion (2 used)
M7	Ion Trap	S-17461	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	192-225	
Escutcheon	57-2249	Models Z2360RZ, Z2359Z, EZ, RZ
Escutcheon	57-2250	Models Z3012HZ, RZ, Z3014HZ, RZ
Knob	S-40954	Channel Selector - Models Z2360RZ , Z2359Z, EZ, RZ
Knob	S-24580	Channel Selector - Models Z3012HZ, RZ, Z3014HZ, RZ
Knob	S-22408	Fine Tuning
Knob	S-22025	UHF Dial - Models Z2360RZ, Z2359Z, EZ, RZ
Knob	S-22863	UHF Tuning
Knob	46-1736	On-off-volume -Models Z2360RZ, Z2359Z, EZ, RZ
Knob	46-1742	On-off-volume - Models Z3012HZ, RZ, Z3014HZ, RZ
Knob	46-1117	Horiz. Hold
Knob	S-22935	Vert. Hold, brightness, contrast
Knob	46-1018	Tone
Knob	46-1055	Tone

ZENITH MODELS Z2359EZ, EZU, RZ, RZU, Z, ZU, Z2360RZ,
RZU, Z3012HZ, RZ, Z3014HZ, RZ (Ch. 22Z30, U, Q)
ALTERNATE TUNER SCHEMATIC
FOLDER 4
PAGE 17
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
RF AMP 6BK7A
MIXER A 6U8
OSC B 6U8
UHF OSC 6AF4A
VHF Tuner Part #S-23113
UHF Tuner Part #S-41364
UHF IF STRIP
FINE TUNING
Crystal Mixer
Part #103-15
Channel Bracket
ANT. TERMINAL BOARD
RF Strip Used On Channels 4 Thru 13 Only
RF Strip Used On Channels 2 & 3 Only
Not Used In All Versions
Sleeve Serves As RF Choke To Prevent Oscillator Radiation & Must Not Be Removed
If Metal Strapped, Wattage Rating May Be 2W.
(IF OUTPUT) To C27
(RF AGC) To Junction Of R26 & C35
255V
VHF
UHF



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the brightness and contrast controls for a normal picture.

Turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.

Adjust width slug (B1) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

PHOTOFACT* Folder
*TRADE MARK

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 3 IN SET 362

FIRESTONE MODEL 13-G-210 (Codes 199-6-17T25B, 199-6-17T25C)

	Firestone Model 13-G-210 (Code 280-6-17T25) was covered in Photofact Folder 3 — Set 362. Model 13-G-210 (Codes 199-6-17T25B, 199-6-17T25C) is electrically identical to the model covered, except for the following changes.
Code 199-6-17T25B, 199-6-17T25C, (Run 1)	TO IMPROVE OVERALL PERFORMANCE V9 (audio output) is changed from 12BK5 to 5AQ5. A partial schematic showing the new circuit is given in Fig. 1. V11 (horizontal AFC-horizontal oscillator) is changed from 7AU7 to 6CG7. A partial schematic showing the new circuit is given in Fig. 2. R79 is increased from 50Ω to 58Ω. R45 is increased from 150Ω to 330Ω. R44 is omitted. A 25MFD @ 25V electrolytic capacitor is added from pin 2 of V9 (5AQ5) to ground. (Shown in Fig. 1).
Code 199-6-17T25B, 199-6-17T25C (Run 2)	TO IMPROVE OVERALL PERFORMANCE K4 (Sync Couplate) is replaced by individual components. A partial schematic showing the new circuit is given in Fig. 3.

PRODUCTION CHANGES
BULLETIN 196

PRODUCTION CHANGES
BULLETIN 196

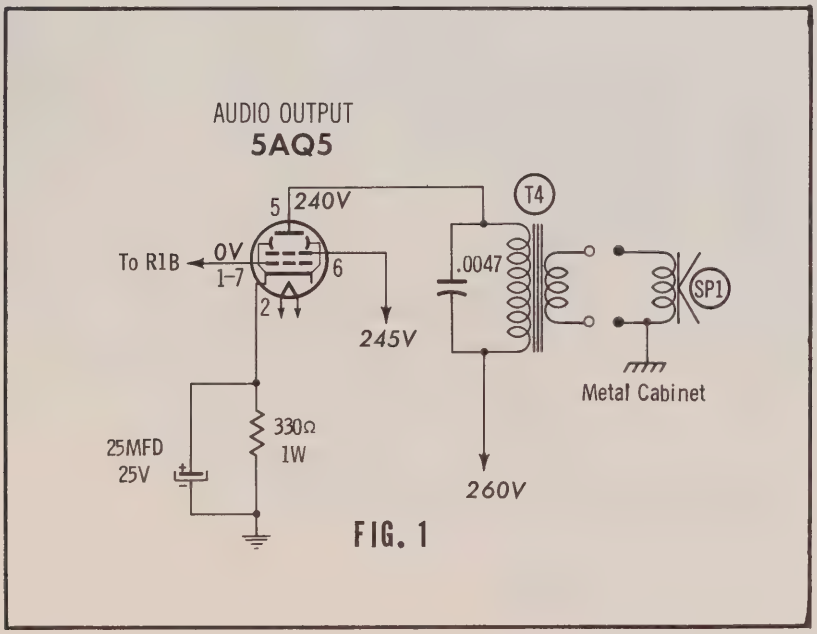


FIG. 1

(Continued on reverse side)

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FOLDER 5

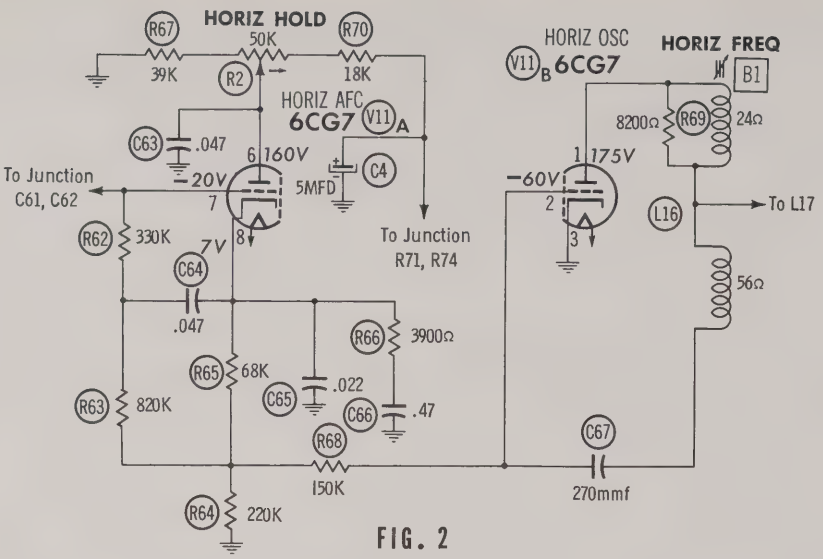

R67
HORIZ HOLD
50K
R70
39K
R2
18K
HORIZ AFC
6CG7
V11A
C63
.047
6
160V
C4
5MFD
To Junction
C61, C62
20V
7
8
7V
R62
330K
C64
.047
R66
3900Ω
R65
68K
C65
.022
C66
.47
R63
820K
R68
150K
R64
220K
To Junction
R71, R74
HORIZ OSC
V11B 6CG7
HORIZ FREQ
B1
8200Ω
R69
24Ω
1
175V
-60V
2
3
L16
To L17
56Ω
C67
270mmf

FIG. 2

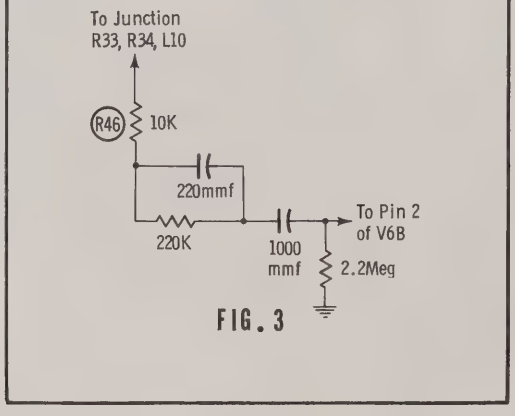

To Junction
R33, R34, L10
R46
10K
220mmf
220K
1000
mmf
To Pin 2
of V6B
2.2Meg

FIG. 3

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 351

ADMIRAL MODELS TS101, TS102, TS103, TS104, TS105AL, TS106AL, TS107AL, TS140, TS141, TS142, TS143, TS144AL, TS145AL, TS1010, TS1011AL, TS1012AL, TS1013AL (Ch. 14UY3B, C)

Admiral Models TS101, TS102, TS103, TS104, TS105AL, TS106AL, TS107AL, TS140, TS141, TS142, TS143, TS144AL, TS145AL, TS1010, TS1011AL, TS1012AL, TS1013AL (Ch. 14UY3B, C) were covered in Photofact Folder 1 — Set 351.

The following changes were made during late production.

TO MAKE SYNC CIRCUITS NON-CRITICAL DUE TO TUBE VARIATION

A 22MMF, N750 ceramic disc capacitor is added from pin 3 of V5B (Sync Sep.) to ground.

A 10,000MMF @ 450V ceramic disc capacitor is added between pin 3 of V6B (Sync Sep.) and pin 9 of V7B (Sync Phase Inv.).

A 1.8Meg, $\frac{1}{2}$ watt resistor is added between pins 8 and 9 of V7B (Sync Phase Inv.).

A 2.2Meg, $\frac{1}{2}$ watt resistor is added from pin 9 of V7B (Sync Phase Inv.) to ground.

R55 is decreased from 47K to 27K.

R56 is decreased from 330K to 150K.

R70 is decreased from 3300Ω to 1500Ω.

R69 is decreased from 6800Ω to 3300Ω.

R71 is decreased from 3300Ω to 1500Ω.

R72 is omitted.

A 47K, 1 watt resistor is added in parallel with R24 and R25. Some late production models may replace the 3 resistors mentioned above with one 11K, 4 watt resistor.

TO COMPLY WITH FCC REGULATIONS AS TO RADIATION

C81 is omitted.

A .047MFD @ 1000V capacitor is added across the AC interlock plug.

An RF choke (part #73B31-1) is added from one side of the AC line to the junction of of R91 and R92.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 350

MAGNAVOX CHASSIS CR-730BA, CR730-CB

Magnavox Chassis CR-730AA was covered in Photofact Folder 9 — Set 350.

Chassis CR-730BA and CR-730CB are electrically identical to the chassis covered except for the following changes.

Ch. CR-730CB

MOOD-MUSIC SWITCH ADDED

Chassis CR-730CB incorporates a mood-music switch which is a part of R2A (treble control), part #220135-3. A partial schematic showing the new circuit is given in Fig. 1.

Ch. CR-730BA
CR-730CB

TO REDUCE HUM

T1 (filament transformer) is changed to part #320277-1.

R62 is omitted.

Two 100Ω, $\frac{1}{2}$ watt resistors (wired in series) are added across the secondary of the new filament transformer mentioned above. The center tap junction of these resistors is wired to ground. The resistors are used for balancing resistors across the extra filament winding. A partial schematic showing the new filament transformer and circuit is given in Fig. 2.

(Continued on reverse side)

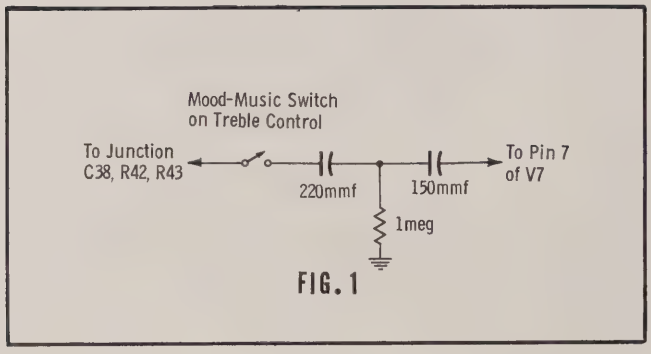

Mood-Music Switch
on Treble Control
To Junction
C38, R42, R43
To Pin 7
of V7
220mmf
150mmf
1meg

FIG. 1

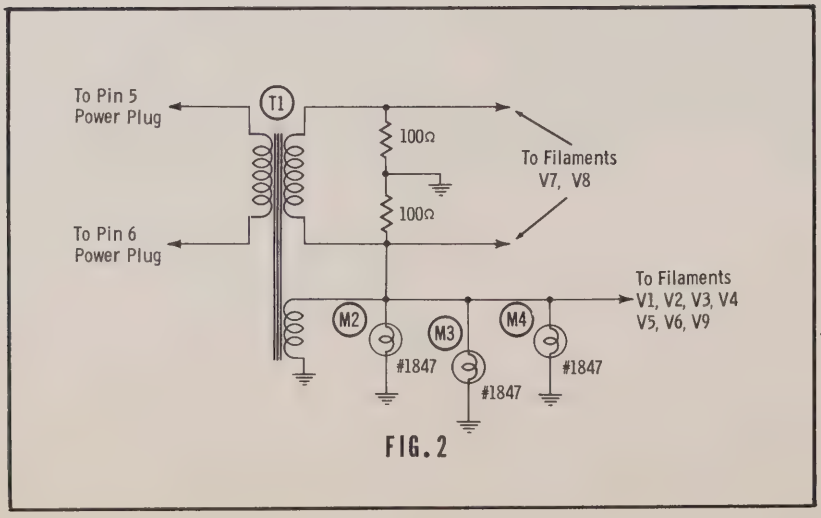

To Pin 5
Power Plug
To Pin 6
Power Plug
T1
100Ω
100Ω
To Filaments
V7, V8
To Filaments
V1, V2, V3, V4
V5, V6, V9
M2
M3
M4
#1847
#1847
#1847

FIG. 2

PHOTOFACT* Folder

*TRADE MARK

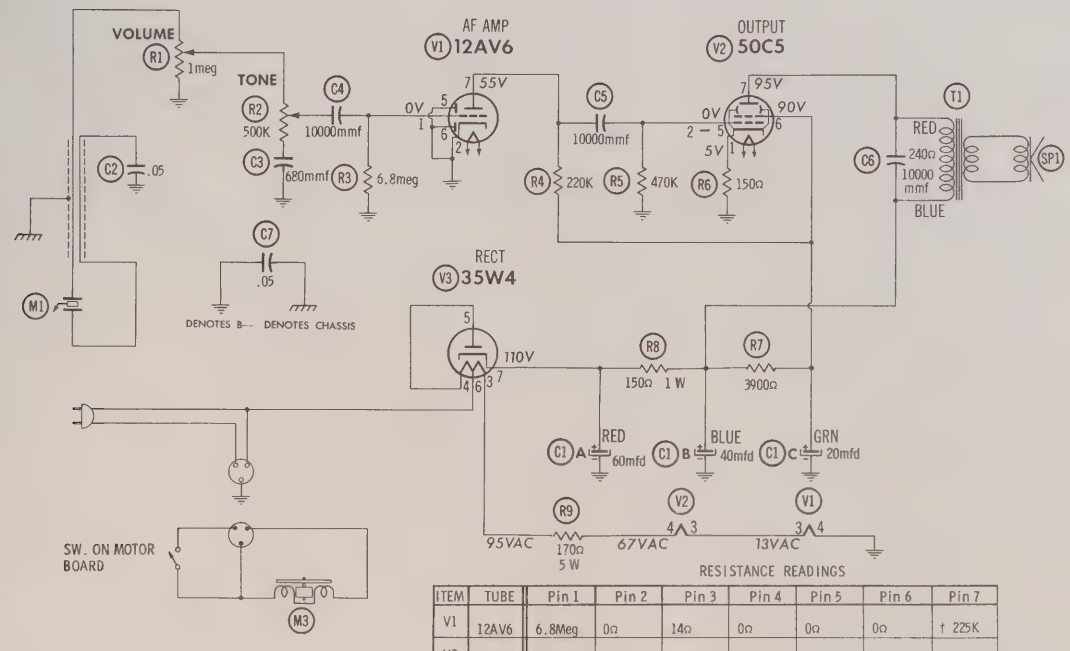
COLUMBIA RECORDS MODEL 516

COLUMBIA RECORDS MODEL 516

PROPERTY OF
L.F. [illegible] SHIP
[illegible]
DEPOT, [illegible]

TRADE NAME	Columbia Records Model 516
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N.Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AV6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .27 Amp. @ 117 Volts AC (27 Watts Without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1200A — PHOTOFACT SET 353 FOLDER 16.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AV6	6.8Meg	0Ω	14Ω	0Ω	0Ω	0Ω	† 225K
V2	50C5	150Ω	470K	14Ω	60Ω	470K	† 4000Ω	† 390Ω
V3	35W4	NC	NC	240Ω	270Ω	270Ω	260Ω	20K (MIN)

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

383-6

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FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	11B713	AFH3-12	BBRT84215	TCT3117	TDLT-7	FMT-339	TVA-3455
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C3	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C4	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	.05	400		BPD-05	DD-503	CUB4S5		GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	9B544	B-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	½	9B545	B-59	A47-500K-S	Q11-133	U50	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R3	6.8Meg			
R4	220K			
R5	470K			
R6	150Ω			
R7	3900Ω			
R8	150Ω	1		
R9	170Ω	5	16B410	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2350Ω	3-4Ω	3B205	Z1101	A-3025	A-3332	22S45 ①	S-12X	① Drill new mtg. hole.

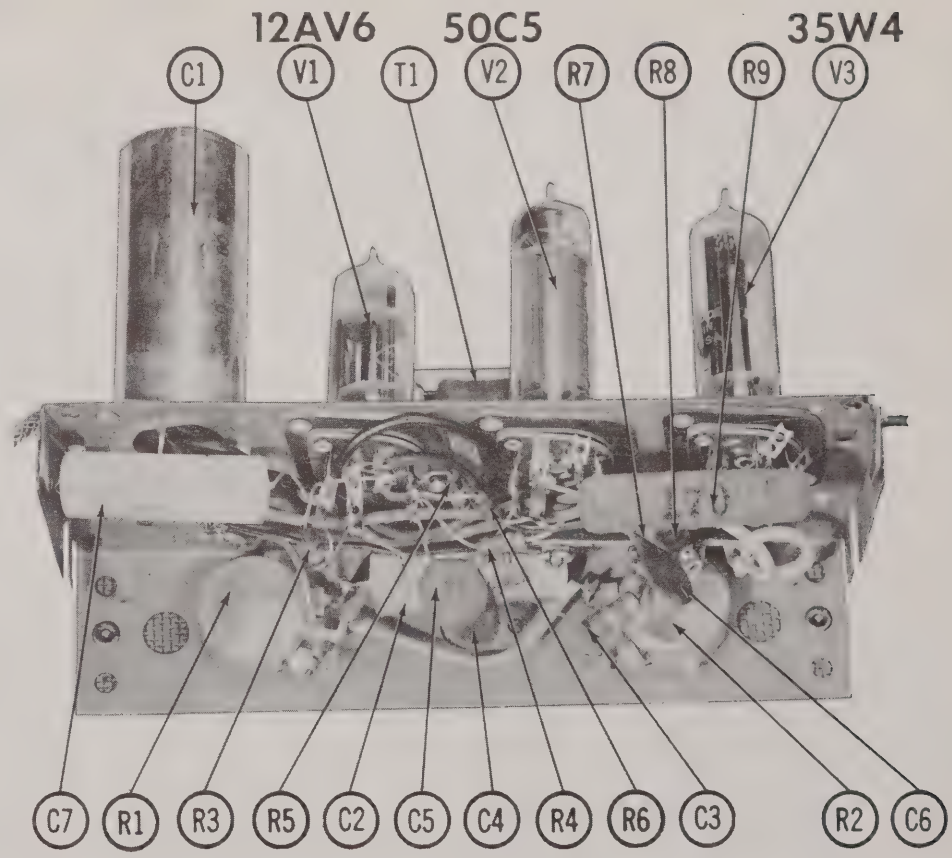
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Columbia Records PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	1B109	5A1R	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Columbia Records PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	TO-400-OV			56	PT-1	

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA Columbia Records PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2		† CRA-55 or ♦ CRA-55D and † CRA-55LP or ♦ CRA-55LPD	† W-64S and † W-64MGS	† Jewel ♦ Diamond

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B454	Gray
Knob	8B453	White
Cabinet	17B941	Gray
Cabinet	17B937	Blue

PHOTOFACT* Folder
*TRADE MARK

KNIGHT
MODELS 93SZ506, 93SZ738

KNIGHT
MODELS 93SZ506, 93SZ738

PROPERTY OF
DENVER, COLORADO

KNIGHT
MODELS 93SZ506, 93SZ738

TRADE NAME	Knight Models KN-3025 (93SZ506), KN-3125 (93SZ738)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC - Battery Operated 5 Channel 25 Watt Audio Amplifier
TUBES (Seven)	Types ECC83/12AX7 (or) 12AD7 Mic 1 Preamp.-Mic 2 Preamp., 6AV6 AF Amplifier, ECC83/12AX7 (or) 12AD7 AF Amp.-Phase Inv., (2) 6L6GB Output, (2) 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC (or) 6 Volt Storage Battery (or) 12 Volt Storage Battery
RATING	.82 Amp. @ 117 Volts AC (or) 17 Amp. @ 6.3 Volts DC (or) 8.5 Amp. @ 12.6 Volts DC (85 Watts)

MODEL 93SZ738 HAS 4 SPEED MANUAL RECORD PLAYER

TRUMPET PROTECTOR SWITCH (M7)

To provide protection to trumpet speakers, the switch (M7) should be in the "ON" position. If no trumpet speakers are used, the switch should be in the "OFF" position to increase the low frequency response of the amplifier.

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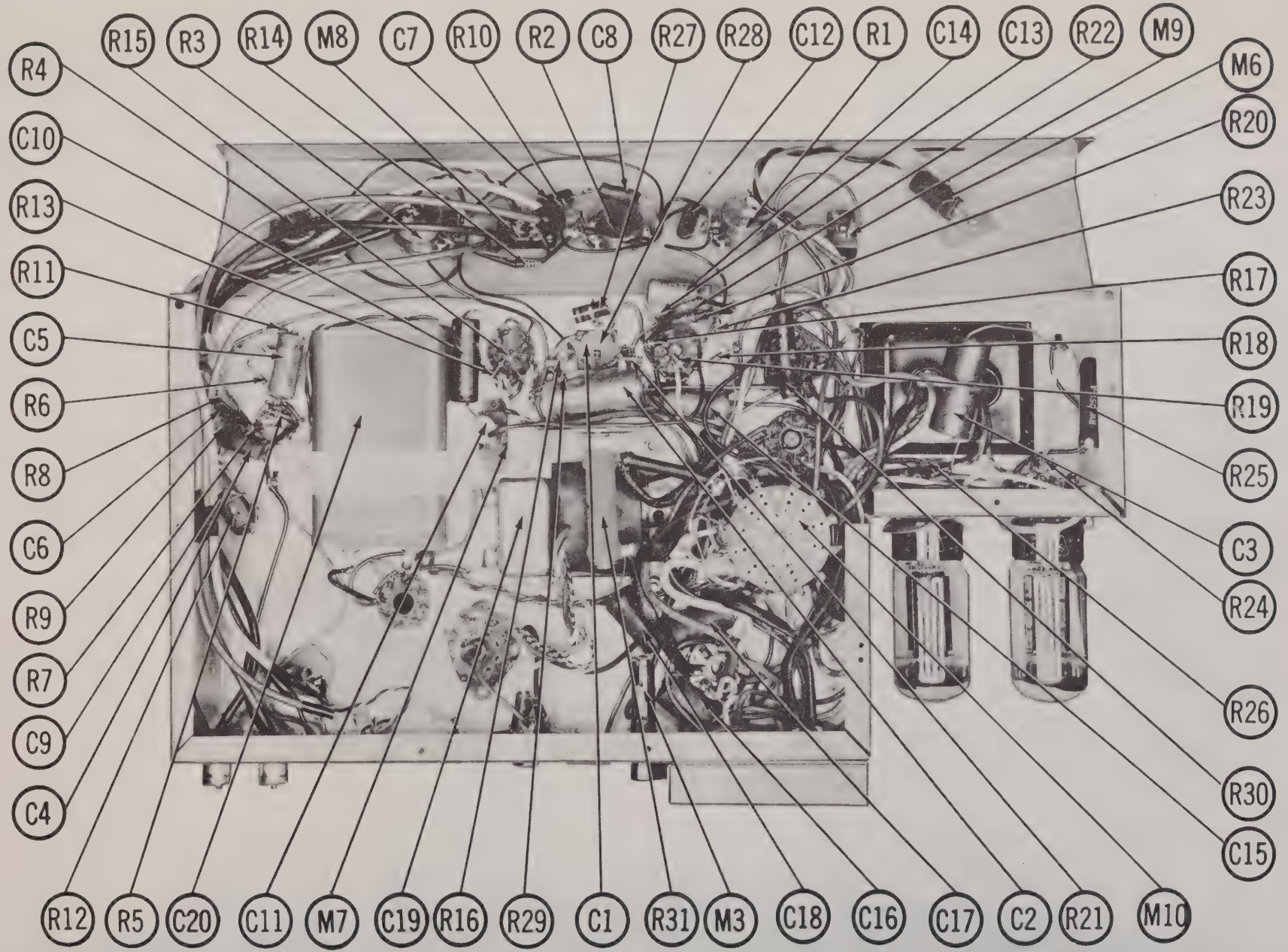
H197

DATE 1-58 SET 383 FOLDER 7



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic 1 Preamp.-Mic 2 Preamp	ECC83/ 12AX7	Note 1
V2	AF Amplifier	6AV6	
V3	AF Amp. -Phase Inv.	ECC83/ 12AX7	Note 1
V4	Output	6L6GB	
V5	Output	6L6GB	
V6	Rectifier	6X5GT	
V7	Rectifier	6X5GT	

Note 1. Some versions use 12AD7 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬40	450		AFH3-41	CO320	FP396.2	TMT-36	Q-055	TVL-3783
B	▬10	450							
C	▲10	450							
C2	8	450		PRS450V8	BR845	TC71	TD-8-450	MT-4508	TVA-1704
C3	35	50		PRS150V40	BR505	TC48	TD-40-150	MT-1540	TVA-1308

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.022	200		P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C5	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C6	.022	200		P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C7	.0033	600		P688N-0033	D6-332	CUB6D33	GP-3300	GEM-6233	6TM-D33	
C8	.01	200		P288N-01	DD-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C9	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C10	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C11	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C12	.01	200		P288N-01	DD-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C13	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C14	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C15	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C16	.47	100		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C17	.47	100		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C18	.47	100		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C19	.5	400								
C20	4.0									

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	RP-105AC-C	B-70	A47-1Meg-Z	Q13-137	U53	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2	4Meg	½	RP-405A					Phono 1 & 2, Tap @ 2Meg
R3A	1Meg	½	RP-105AC-C	B-70	A47-1Meg-Z	Q13-137	U53	Mic 2 - Mag.
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	1Meg	½	RP-105AD	B-70	A47-1Meg-Z	Q13-137	U53	Mic 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

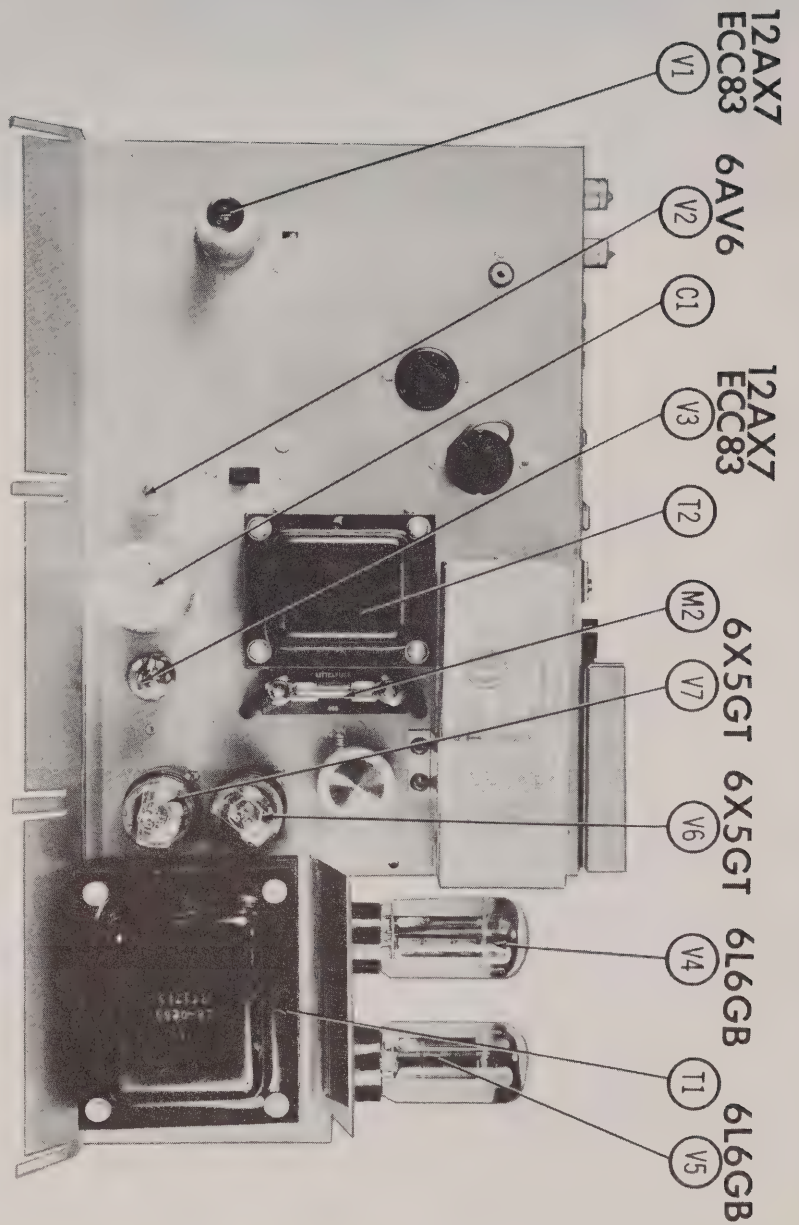
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R5	10Meg			
R6	220K			
R7	10Meg			
R8	220K			
R9	100K			
R10	22K			
R11	100K			

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R12	100K			
R13	1Meg			
R14	470K			
R15	220K			
R16	3300Ω			
R17	470K			
R18	4700Ω 5%			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	KNIGHT PART No.	NOTES
R19	150K			
R20	470K			
R21	47K			
R22	680Ω			
R23	47K			
R24	470K			
R25	250Ω	10	RW2251-A	
R26	470K			
R27	4700Ω	2		
R28	10K			
R29	10K			
R30	10Ω	10	RW2100-B	
R31	.2Ω	20	RW3010AA	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .82A	680VCT @ .120A	6.3VCT @ .55A① or 6.3VCT @ 2.1A②	6.3VCT @ .55A① or 6.3VCT @ 2.1A②	LP-0260					
	DC OPERATION PRI. 1: 6.3VCT @ 2.5A③ or 6.3VCT @ 3A④	680VCT @ .120A								
	DC OPERATION PRI. 2: 6.3VCT @ 2.5A③ or 6.3VCT @ 3A④									

① 6V filament operation.
② 12V filament operation.
③ 6V input operation.
④ 12V input operation.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6000Ω	500Ω Tap@ 250Ω 70V,16Ω 8Ω,4Ω	LO-0151						

PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA KNIGHT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interruptor (Parallel type)	6V(or) 12V	60∿	JV-0021	6VB6UL		6VB6UL	

FUSES

ITEM No.	TYPE	RATING	KNIGHT PART No. FUSE	KNIGHT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	6 1/4A 32V			3136.25 (3AG 6 1/4A 32V)	341001	MDL 6 1/4	HKP
M3	4AG	25A 32V			411025. (4AG 25A 32V)	456001	AGS25	4413

PHONO CARTRIDGE

ITEM No.	KNIGHT PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M4		55T * P-55-T	GD	56 * 2756	PT-2	* Tone arm complete with cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

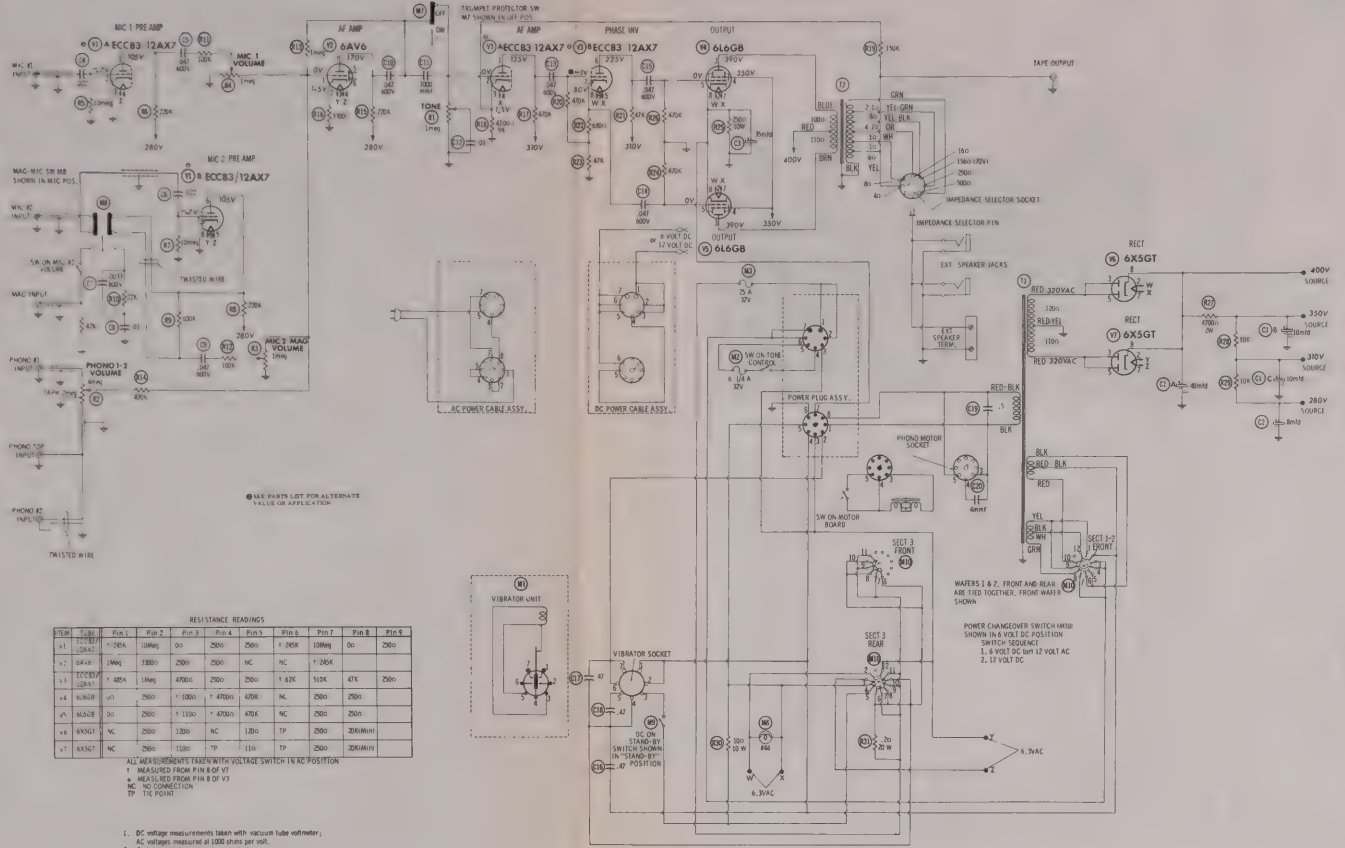
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	KNIGHT PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M5		† A-71 or †♦ A-71SD or ♦ A-71D	* W-8TPA or † W-8TPS or †♦ W-8DS or ♦ W-8TPD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M6	Indicator Lamp		#44
M7	Switch		Trumpet Protector (Slide Type SPST)
M8	Switch		Mic-Mag (Slide Type DPDT)
M9	Switch		DC ON-Stand By (Slide Type SPST)
M10	Switch	X-0305-B	Power Changeover (Rotary Wafer Type)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
v1	ECC83 12AX7	* 240K	10Meg	0Ω	250Ω	250Ω	* 245K	10Meg	0Ω	250Ω
v2	6AV6	1Meg	330Ω	250Ω	250Ω	NC	NC	* 245K		
v3	ECC83 12AX7	* 485K	1Meg	470Ω	250Ω	250Ω	* 62K	510K	47K	250Ω
v4	6L6GB	VO	250Ω	* 100Ω	* 470Ω	470K	NC	250Ω	250Ω	
v5	6L6GB	0Ω	250Ω	* 100Ω	* 470Ω	470K	NC	250Ω	250Ω	
v6	6X5GT	NC	250Ω	120Ω	NC	120Ω	TP	250Ω	20K/Min†	
v7	6X5GT	NC	250Ω	120Ω	TP	110Ω	TP	250Ω	20K/Min†	

ALL MEASUREMENTS TAKEN WITH VOLTAGE SWITCH IN AC POSITION
† MEASURED FROM PIN 8 OF V7
* MEASURED FROM PIN 8 OF V3
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected

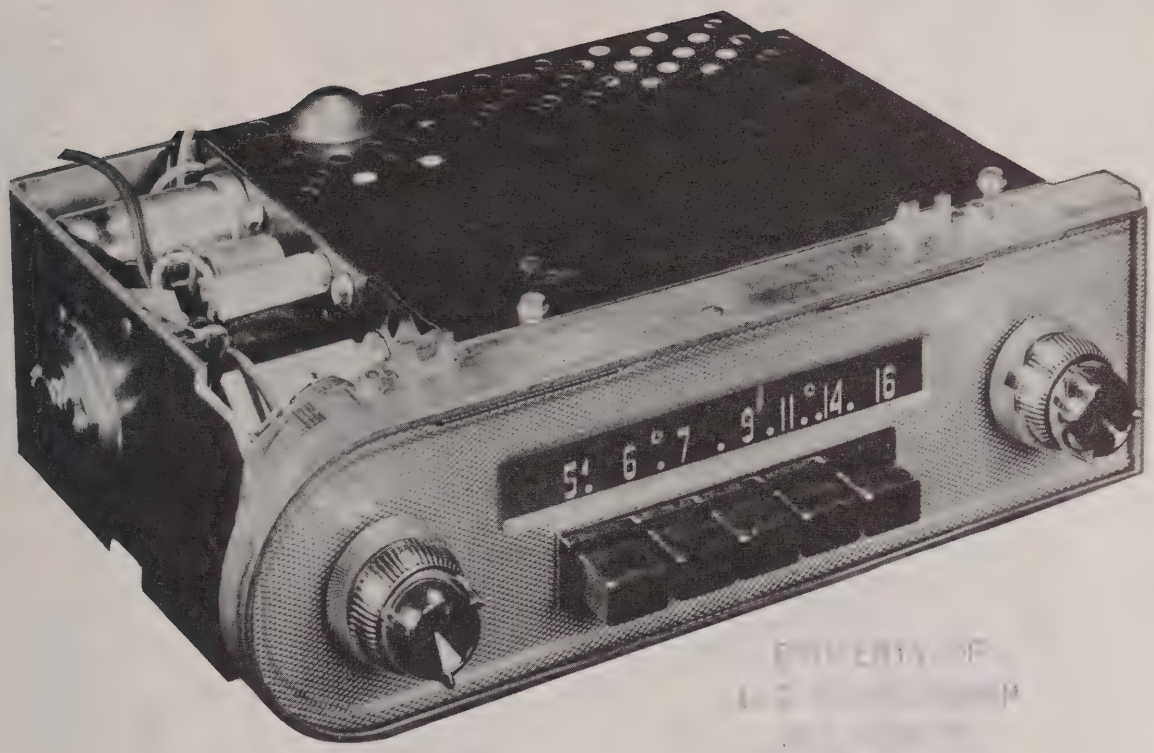
PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

MOPAR MODELS 847 (C5705), 848 (P5701)

MOPAR MODELS
847 (C5705), 848 (P5701)



MOPAR MODELS
847 (C5705), 848 (P5701)

TRADE NAME	Mopar Model 847 (C5705) For 1957 Chrysler Automobiles), 848 (P5701) For 1957 Plymouth Automobiles)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12AE6 Det.-AVC-AF Amp., 12AE7 AF Amplifier
POWER SUPPLY	12 Volt Storage Battery — RATING 1.6 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1605KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set tone control at center of range (Model 847 only).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400~ Mod)	1605KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to ant. receptacle.	1605KC	1605KC	"	A5, A6, A7	"

With radio installed in car, and antenna fully extended, tune in a weak station near 1200KC. Adjust A7 for maximum output.

PUSHBUTTON ADJUSTMENT

1. Extend antenna. Allow receiver to warm up for 15 minutes.
2. Pull pushbutton out.
3. Tune manually to desired station.
4. Press pushbutton in firmly.
5. Repeat for remaining pushbuttons.

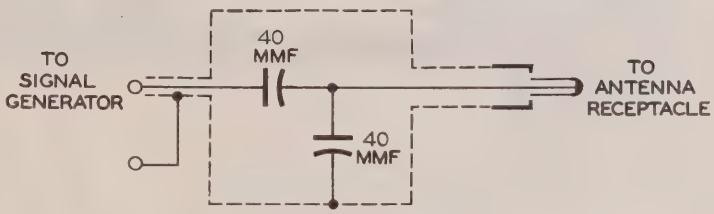


FIG. 1

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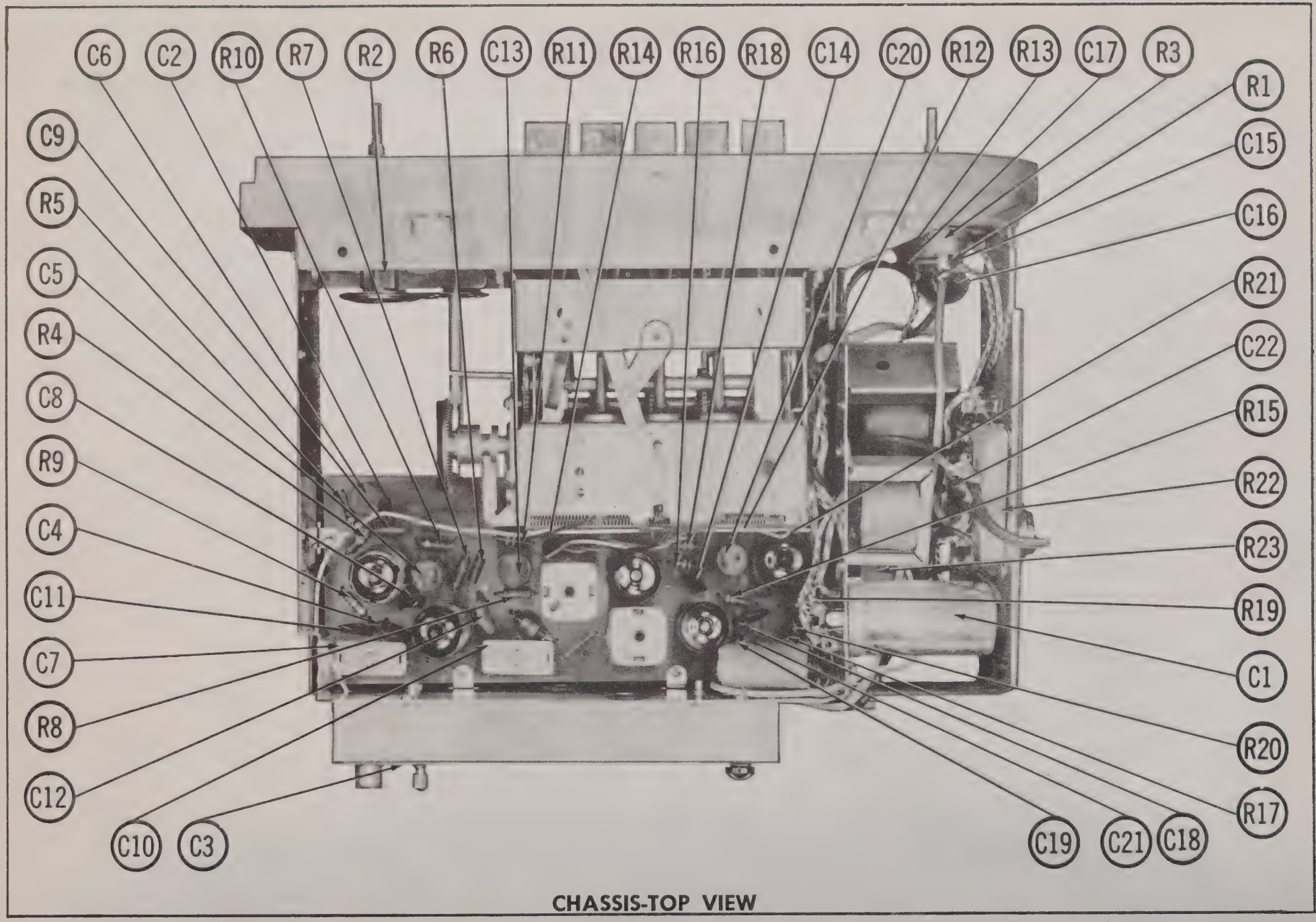
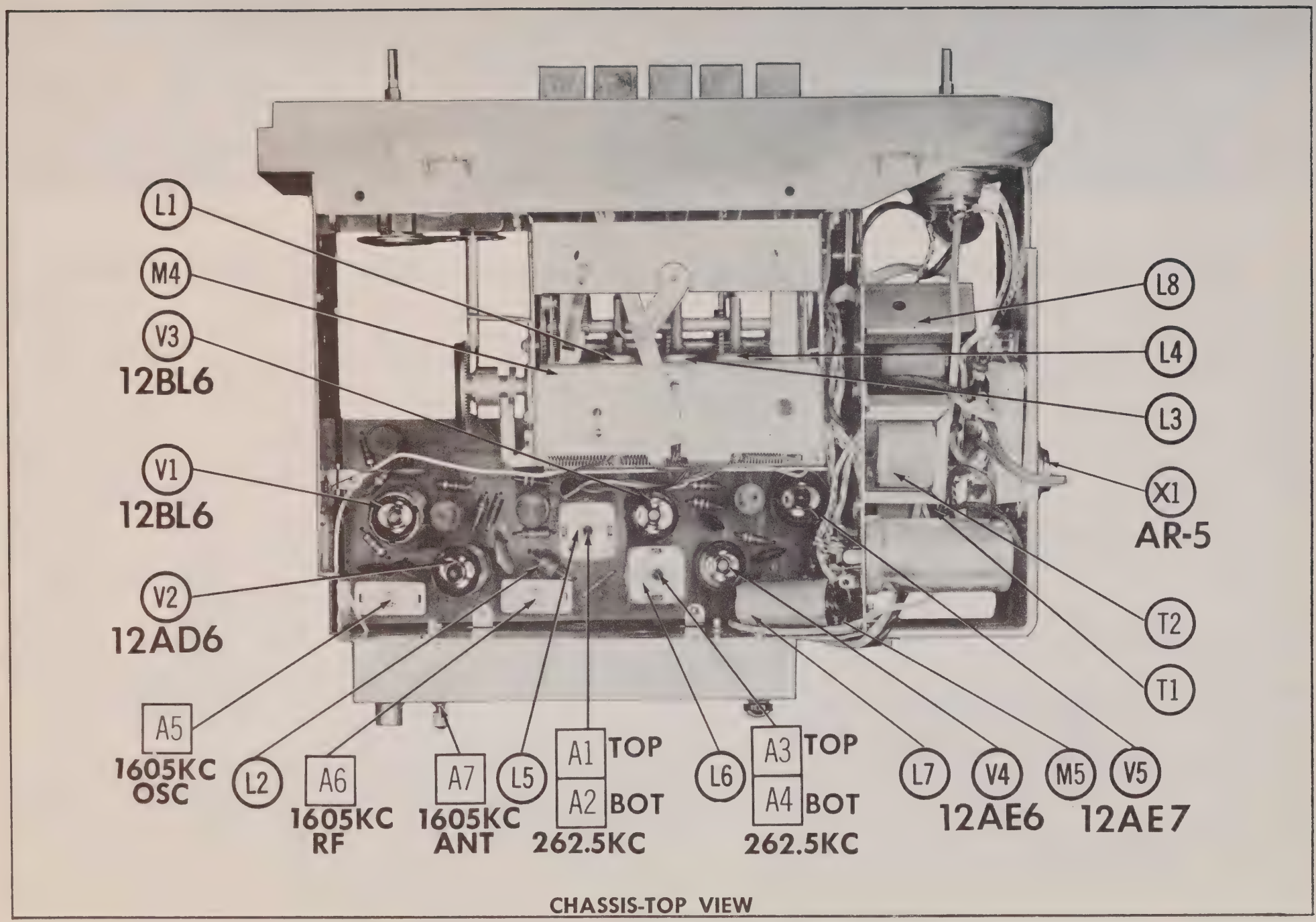
H250

FOLDER 8



CHASSIS-TOP VIEW



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	5"x7"	PM	3-4Ω	36-1670-2	57A15	① Used as rear seat speaker (Model 847 only)
	5"x 7"	PM	3-4Ω	36-1670-2 ①	57A15	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	32-4730-1				Model 847 ①
	Ant. Coil	32-4730-10				Model 847 ②
	Ant. Coil	32-4730-7				Model 848 ③
	Ant. Coil	32-4730-16				Model 848 ④
L2	RF Choke	32-4480-24	19-3160	TV-196	6120	150 Microhenries
L3	RF Coil	32-4730-2				Model 847 ①
	RF Coil	32-4730-11				Model 847 ②
	RF Coil	32-4730-8				Model 848 ③
	RF Coil	32-4730-17				Model 848 ④
L4	Osc. Coil	32-4730-3				Model 847 ①
	Osc. Coil	32-4730-12				Model 847 ②
	Osc. Coil	32-4730-9				Model 848 ③
	Osc. Coil	32-4730-18				Model 848 ④
L5	Input IF	32-4676-1	16-6756	BC-344	13-PH1	
L6	Output IF	32-4677-2				
L7	Hash Choke	32-4720-3				

① Part of tuner assembly #76-11437-1.
② Part of tuner assembly #76-11437-2.
③ Part of tuner assembly #76-11434-1.
④ Part of tuner assembly #76-11434-2.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L8	.011A	19Ω	.5 HY	32-8788					

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	7AG	7½A 32V	45-2656-53	45-4244-2	30307.5 (7AG 7½A 32V)	155 009	AGW 7½	HDH

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Dial Lamp	34-2064	#44
M3	Dial Lamp	34-2064	#44, Not used in Model 848
M4	Tuner	76-11437-1	Complete assembly, Model 847
	Tuner	76-11437-2	Complete assembly, Model 847 (Alternate)
	Tuner	76-11434-1	Complete assembly, Model 848
	Tuner	76-11434-2	Complete assembly, Model 848 (Alternate)
M5	Spark Plate	30-1254-1	300MMF

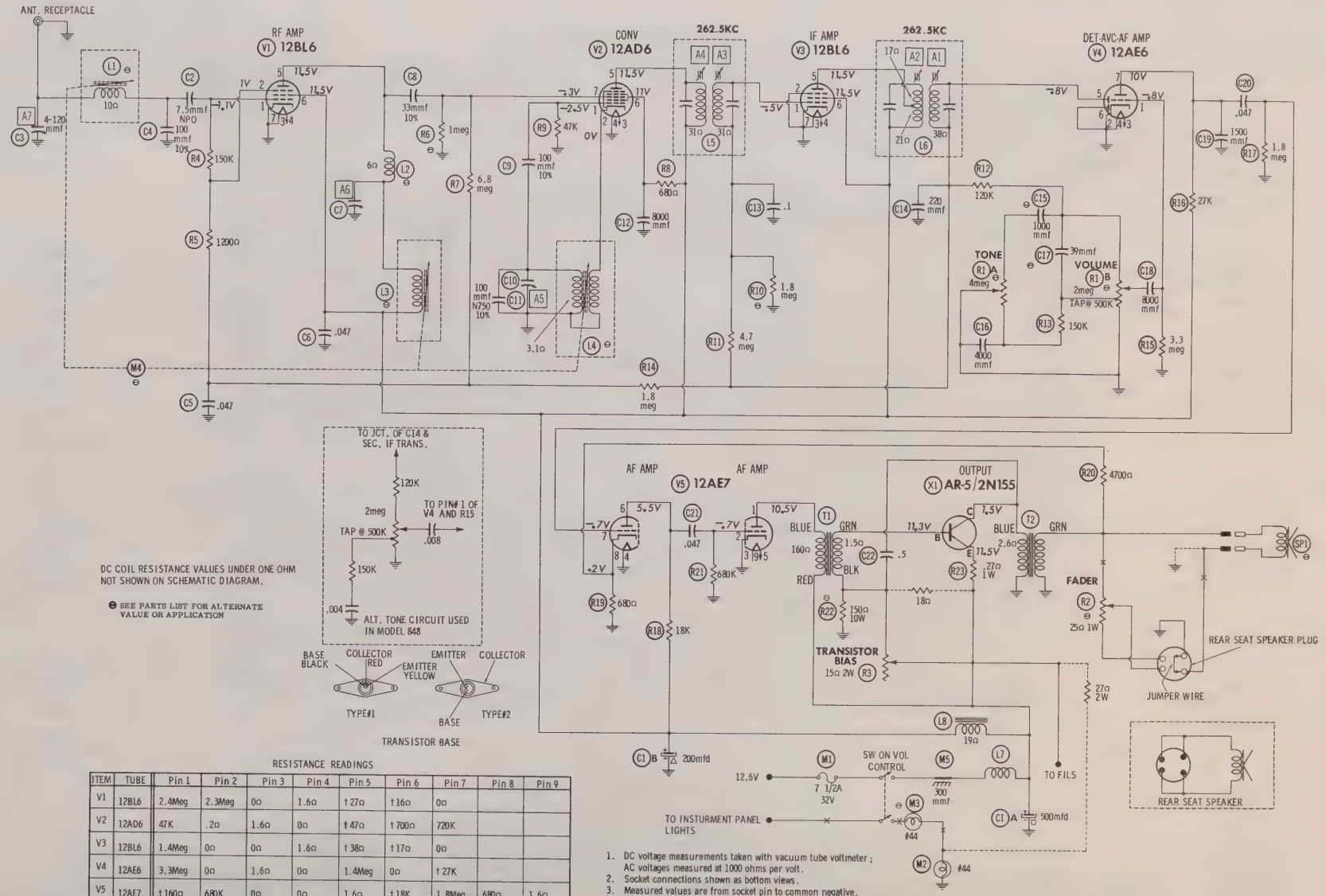
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	28-11689	Model 847
Bezel	28-11669-1	Model 848
Knob	28-11691	Tone & Fader, Model 847
Knob	27-4687-25	On-off-volume & tuning, Model 847
Knob	27-4687-24	On-off-volume & tuning, Model 848
Dial Scale	54-9991	Model 847
Dial Scale	28-11758	Model 848

TRANSISTOR BIAS ADJUSTMENT (R3)

The bias adjustment should be checked if the transistor is replaced. To do this, connect a low range voltmeter (not a VTVM) across the primary winding of the output transformer (T2). Set the control at the center of its range. Connect a power source of 14 volts DC to the receiver and allow a warm-up period of 15 minutes. With no signal input, adjust R3 for a reading of 1.25 volts on the voltmeter. Use insulated tool, control is "hot" to chassis. (This is equivalent to a collector current of 500MA).



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	2.4Meg	2.3Meg	0Ω	1.6Ω	†27Ω	†16Ω	0Ω		
V2	12AD6	47K	.2Ω	1.6Ω	0Ω	†47Ω	†700Ω	720K		
V3	12BL6	1.4Meg	0Ω	0Ω	1.6Ω	†38Ω	†17Ω	0Ω		
V4	12AE6	3.3Meg	0Ω	1.6Ω	0Ω	1.4Meg	0Ω	†27K		
V5	12AE7	†160Ω	680K	0Ω	0Ω	1.6Ω	†18K	1.8Meg	680Ω	1.6Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

† MEASURED FROM JUNCTION OF M5 and L7.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	

ITEM No.	USE	TYPE	NOTES
V4	Det. -AVC-AF Amp.	12AE6	
V5	AF Amplifier	12AE7	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	AR-5	Output	2N155		AR-5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■500	18	61-0086-9	AFH2-02-75	B0045				R2480 *
B	▲200	18							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	7.5		30-1263-10							NP0
C3	4-120		31-6533-1							
C4	100		30-1251-22	NPO-SI 100	TCZ-100	C10T1C	ED-100	ZT-531	5TCC-T1	10%
C5	.047	200	30-4684-28			BC2S47J		ACE6147	2SE-S47	
C6	.047	200	30-4684-28			BC2S47J		ACE6147	2SE-S47	
C7			31-6532-3							
C8	33		30-1263-8	NPO-SI 33	DD-330	L10Q33	ED-33	ZT-5433	5TCC-Q33	10%
C9	100		30-1263-14	NPO-SI 100	DD-101	L10T1	ED-100	ZT-531	5TCC-T1	10%
C10			31-6532-4							
C11	100		30-1263-14	N750-SI 100	TCN-100	C10T1U	TC7-100	NT-531	5TCU-T1	N750 10%
C12	8000		30-1262-1							
C13	.1	200	30-4684-30			BC2P1J		ACE401	2SE-P10	
C14	220		30-1262-23	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C15	1000		30-1238-3	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	①
C16	4000		30-1238-18	BPD-004	DD-402	BYA10D4	ED-004	UC-524	5GA-D4	
C17	39		30-1251-21	SI 39	DD-390	L10Q39	ED-39	UC-5439	5GA-Q39	①
C18	8000		30-1262-1							
C19	1500		30-1262-10	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C20	.047	200	30-4684-28			BC2S47J		ACE6147	2SE-S47	
C21	.047	200	30-4684-28			BC2S47J		ACE6147	2SE-S47	
C22	.5	100	61-0183	P288N-5		CUB2P5		GEM-205	2TM-P5	

① Used in Model 847 only.

PARTS LIST AND DESCRIPTIONS (Continued)
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4Meg	½	33-5580-16					Tone - Note 1
B	2Meg	½						Volume, tap ② 500K-Note 1
C	Switch							
R2	25Ω	1	33-5576-4					Fade - Note 2
R3	15Ω	2	33-5591-2					Transistor Bias

Note 1. Tone control open at center, 2Meg each side of center. R1A not used in Model 848. R1B and R1C (Part #33-5580-12) used in Model 848 only.
Note 2. Not used in Model 848.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT		
R4	150K		66-4158340	
R5	1200Ω		66-2128340	
R6	1Meg		66-5108340	Note 1
R7	6.8Meg		66-5688340	
R8	680Ω		66-1688340	
R9	47K		66-3478340	
R10	1.8Meg		66-5188340	Note 2
R11	4.7Meg		66-5478340	
R12	120K		66-4128340	
R13	150K		66-4158340	

ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT		
R14	1.8Meg		66-5188340	
R15	3.3Meg		66-5338340	
R16	27K		66-3278340	
R17	1.8Meg		66-5188340	
R18	18K		66-3188340	
R19	680Ω		66-1688340	
R20	4700Ω		66-2478340	
R21	680K		66-4688340	
R22	150Ω	10	33-1367-3	Note 3
R23	.27Ω	1	66-8273360	

Note 1. Some versions may use 820K in this application (Part #66-4828340).
Note 2. Some versions may use 1Meg in this application (Part #66-5108340).
Note 3. Temperature compensating type.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9.5:	1	32-8787						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	24Ω	3-4Ω	32-8786						

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

PHILCO MODELS E-748, E-818

PHILCO MODELS E-748, E-818

PROPERTY OF
[illegible] SCHOOL
DENVER, COLORADO

PHILCO MODELS E-748, E-818

TRADE NAME	Philco Models E-748 (Clock Version), E-818
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated AM Receiver (Model E-748 is AC only)
TUBES (Six)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., (2) 25F5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles
RATING	.31 Amp. @ 117 Volts AC (30 Watts)
TUNING RANGE—BROADCAST	540KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum. Attenuate signal generator to keep output below .5 Volt during alignment. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	1620KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC	1500KC	"	A6	"

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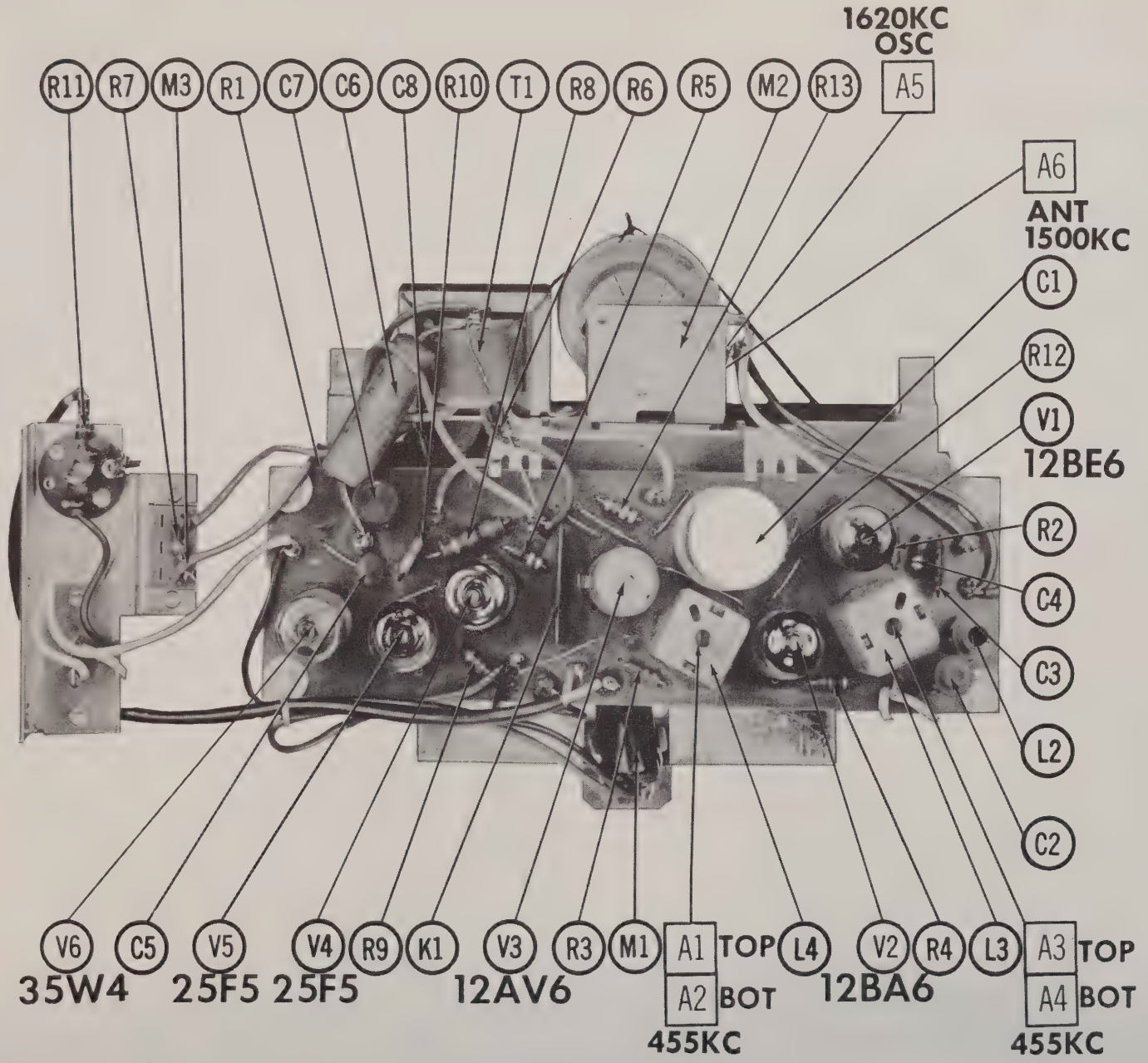


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. - AVC - AF Amp.	12AV6	
V4	Output	25F5	
V5	Output	25F5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲50	150	30-2585-10	PRS150V4040					R2500 *
B	■30	150		40					
C	40	150							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	200	30-4685-45			BC2S47J		ACE6147	2SE-S47	
C3	10000		30-1262	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	7.5		30-1224-83							N2200
C5	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	①
C6	.1	400	30-4650-64	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	②
C7	.047	400	30-4685-45			BC6S47J		ACE6147	4SE-S47	③
C8	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	④

① Some versions may use 220MMF in this application (Part #30-1262-22).
② Model E-748 uses .047MFD in this application (Part #30-4650-62).
③ Model E-748 uses .1MFD in this application (Part #30-4650-64).
④ Some versions may use .047MFD in this application (Part #30-4650-45).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	33-5566-10	AB-60	A47-500K-Z	Q13-133	U48	Volume Note 1
B	Shaft			AK-7	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	

Note 1. Part #33-5565-49 used in Model E-748.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PHILCO PART No.	NOTES
R2	22K		66-3228340	
R3	2.2Meg		66-5228340	
R4	68Ω		66-0688340	
R5	100K		66-4108340	
R6	6800Ω		66-2688340	Note 1
R7	2200Ω		66-2228340	Note 2
R8	100Ω	1	66-1104340	
R9	2200Ω		66-2228340	
R10	1500Ω		66-2158340	Note 3
R11	33K		66-3338340	Note 4
R12	2200Ω		66-2228340	
R13	3300Ω		66-2338340	

Note 1. Model E-748 uses 8200Ω in this application (Part #66-2828340).
Note 2. Used in Model E-818 only.
Note 3. Manufacturer recommends replacing with 2200Ω (Part #66-2228340).
Note 4. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4200Ω CT	2Ω	32-8763 ① 32-8782-1 ②						① Used in Model E-818. ② Used in Model E-748.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	QUAM PART No.	NOTES
SP1	4" X 6"	PM	3-4Ω	36-1633-10 ①	46A1	① Alternate Part #45-9750 used in Model E-818. Part #36-1654-16 used in Model E-748.
SP2	4" X 6"	PM	3-4Ω	36-1633-10 ①	46A1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Antenna	76-11175-1				Includes Cabinet Back, Model E-818
	Loop Antenna	76-9985-2				Includes Cabinet Back, Model E-748
L2	Osc. Coil	32-4693-2				
L3	Input IF	32-4583-12	16-6780	BC-356	13-PC1	
L4	Output IF	32-4583-13	16-6780	BC-357	13-PC2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA	
K1	Audio Couplate	5000MMF, 220MMF, 5000MMF, 250MMF, 6.8Meg, 470K, 470K	30-6006-1	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-113-2 PC-151 116TM2 1408-02 DT-2

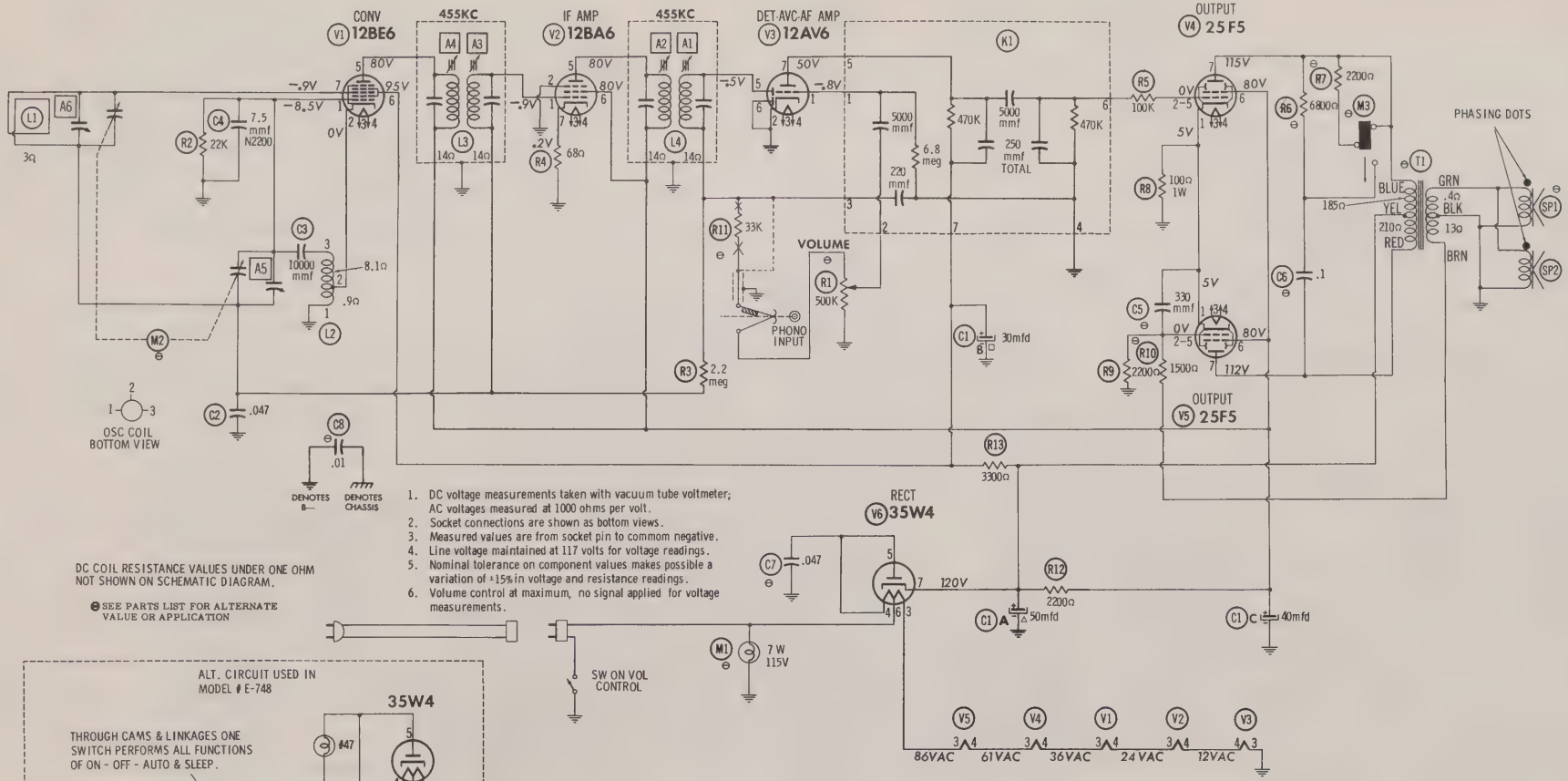
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Pilot Lamp	34-2605	7 Watt-115 Volts, Model E-818
	Pilot Lamp	34-2068	#47, Model E-748
	Pilot Lamp	34-2031-11	#43 Clock Lighting, Model E-748
M2	Tuning Cap.	31-2735-12	2 Gang, Model E-818 (Ant. 12-375MMF, Osc. 12-140MMF)
	Tuning Cap.	31-2735-8	Model E-748
M3	Switch	42-1796-11	Tone Control, Model E-818 only
M4	Switch	42-2055	Clock Light On-Off, Model E-748 only

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

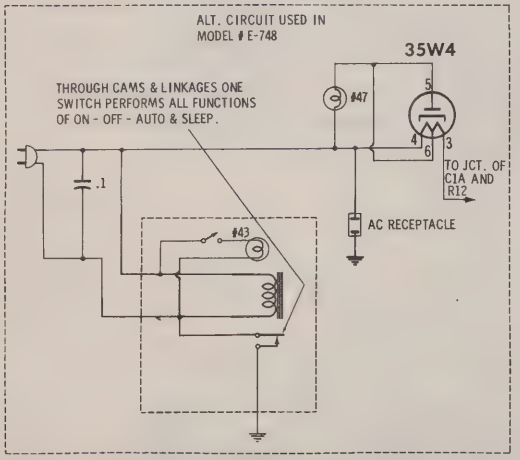
NAME	PART NO.	DESCRIPTION
Bezel	28-11396	Model E-818
Knob	54-6310-1	On-off-volume and tuning, Model E-818
Knob	54-4773-26	On-off-volume and tuning, Model E-748
Knob	54-4773-27	Clock Light, Model E-748
Clock Knob	54-6223-1	(3 used) Model E-748
Cabinet	11217-2	Blond, Model E-818
Cabinet	11217-1	Fruitwood, Model E-818
Cabinet	11217	Mahogany, Model E-818
Cabinet	11075-4	Ivory, Model E-748
Dial Scale	54-6311-1	Model E-818
Dial Scale	54-6238-1	Model E-748
Dial Pointer	56-8774-8	Model E-818
Dial Pointer	56-8774-7	Model E-748
Clock	41-2063-1	Model E-748



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

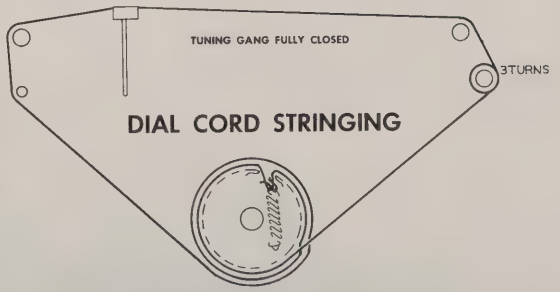
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION


ALT. CIRCUIT USED IN MODEL # E-748
35W4
THROUGH CAMS & LINKAGES ONE SWITCH PERFORMS ALL FUNCTIONS OF ON - OFF - AUTO & SLEEP.
#47
.1
#43
TO JCT. OF C1A AND R12
AC RECEPTACLE

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	36Ω	24Ω	†2200Ω	†3300Ω	2.7Meg
V2	12BA6	2.7Meg	0Ω	24Ω	12Ω	†2200Ω	†2200Ω	68Ω
V3	12AV6	6.8Meg	0Ω	0Ω	12Ω	530K	0Ω	†470K
V4	25F5	100Ω	570K	61Ω	36Ω	570K	†2200Ω	†185Ω
V5	25F5	100Ω	850Ω	86Ω	61Ω	850Ω	†2200Ω	†210Ω
V6	35W4	115Ω	36Ω	86Ω	115Ω	115Ω	108Ω	20K(Min)

† MEASURED FROM PIN 7 OF V6



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Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

*TRADE MARK

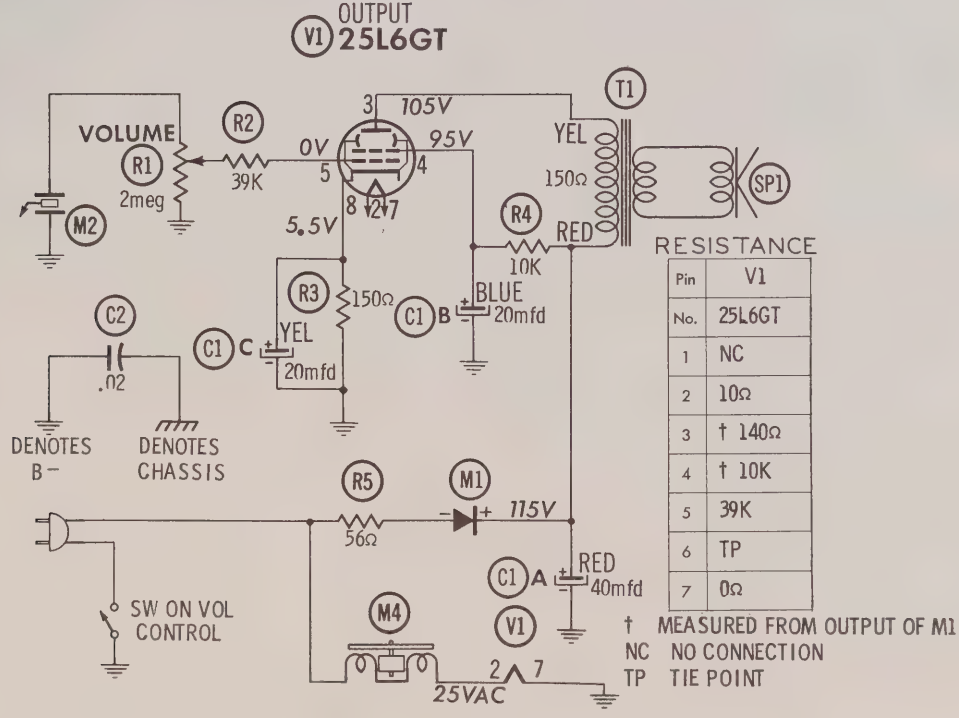
PHONOLA MODEL 156

PHONOLA MODEL 156

PROPERTY OF
[illegible]

TRADE NAME	Phonola Model 156		
MANUFACTURER	Waters Conley Co., Inc., Rochester, Minnesota		
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player		
TUBES (One)	Type 25L6GT Output		
POWER SUPPLY	105-125 Volts AC-60 Cycles	RATING	.35 Amp. @ 117 Volts AC (31 Watts With Motor)

PHONOLA MODEL 156



Pin No.	V1 25L6GT
1	NC
2	10Ω
3	† 140Ω
4	† 10K
5	39K
6	TP
7	0Ω

† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H50

FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25L6GT	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHONOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	12144	PRS150/ 25V4020/20	BBRT4215C	TCT3114	TDLD-12	FMT-321	TVA-3423
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHONOLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.02	200	11508	BPD-02	DD-203	CUB4S2	ED-02	GEM-412	2TM-S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHONOLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2Meg	½	11748	B-76	A47-2Meg-Z	Q13-139	U55	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PHONOLA PART No.	NOTES
	OHMS	WATT		
R2	39K		9144	
R3	150Ω		9897	

ITEM No.	RATING		PHONOLA PART No.	NOTES
	OHMS	WATT		
R4	10K		9273	
R5	56Ω		11744	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHONOLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2000Ω	3-4Ω	Part of Spkr.	Z1101	A-3025	A-3332	24S50 ①	S-12X	① Drill new mounting hole.

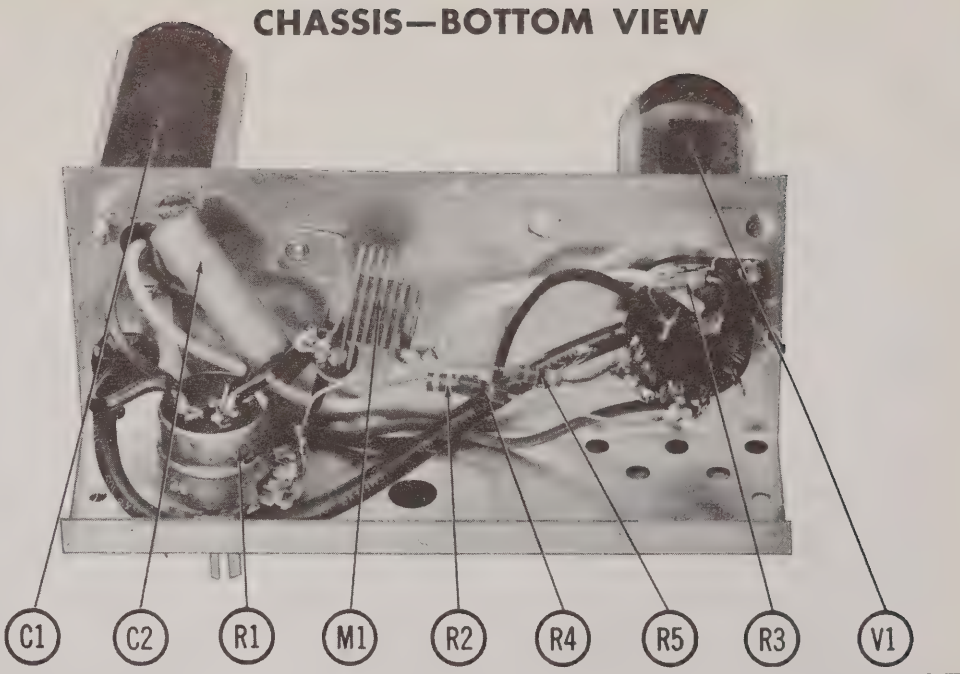
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHONOLA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	11752 ①	4A07	① Includes T1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	PHONOLA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.040A	11756	1386	RS065Q	65	

CHASSIS—BOTTOM VIEW



25L6GT

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	PHONOLA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2	W. C. 11767	28 * P-29	N4-2			* Tone arm complete with cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	PHONOLA PART No.	JENSEN PART No.	WALCO PART No.	
M3	W. C. 10682	* J-152 or † J-252 or ♦ J-252D	* WA400-2 or † WS400-2 or ♦ W-400AGD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	PHONOLA PART No.	NOTES
M4	Motor	12162	OFF position to Left of 78 position.
	Motor	12163	OFF position to Right of 33 position.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

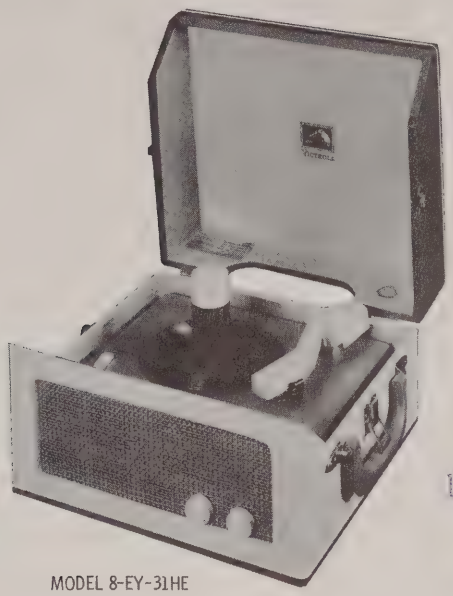
NAME	PART NO.	DESCRIPTION
Knob	12126-2	
Cabinet	156	

PHOTOFACT* Folder

*TRADE MARK

RCA VICTOR MODELS
8-EY-31HE, KE (Ch. RS-153A)

RCA VICTOR MODELS
8-EY-31HE, KE (Ch. RS-153A)



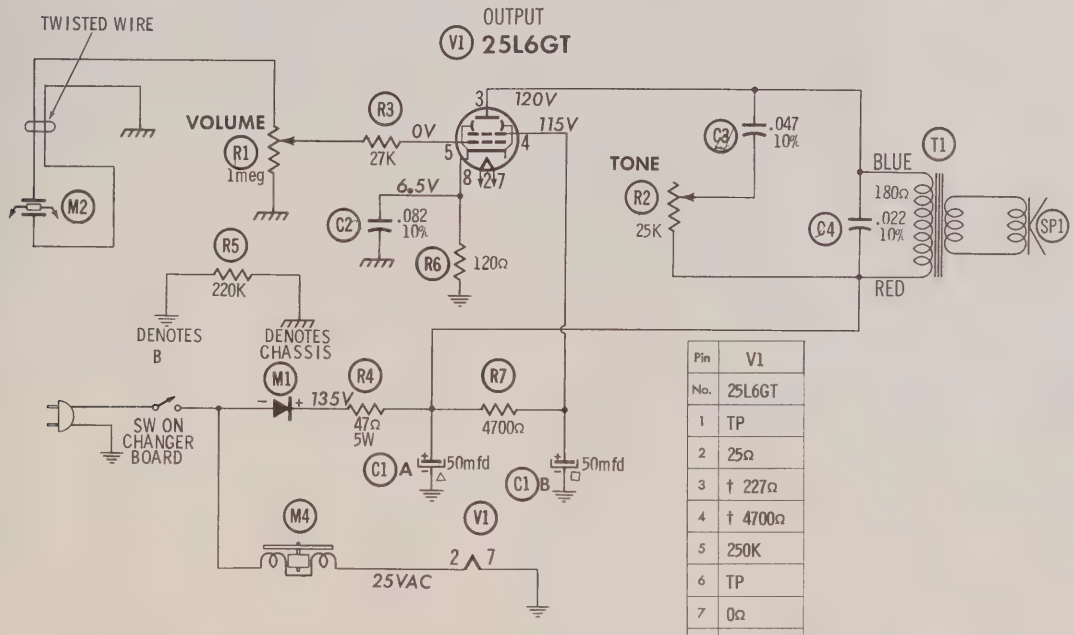
MODEL 8-EY-31HE

PROPERTY OF
L. I. [illegible]
[illegible]
DI[illegible]

RCA VICTOR MODELS
8-EY-31HE, KE (Ch. RS-153A)

TRADE NAME	RCA Victor Models 8-EY-31HE, 8-EY-31KE (Ch. RS-153A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated Phono Amplifier With 45 RPM Automatic Record Changer
TUBES (One)	Type 25L6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .43 Amp. @ 117 Volts AC (45 Watts With Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER RP-190D-1 — SEE RCA MODEL RP-190 SERIES — PHOTOFACT SET 144 FOLDER 7 OR RECORD CHANGER MANUAL CM-4



Pin No.	V1 25L6GT
1	TP
2	25Ω
3	† 227Ω
4	† 4700Ω
5	250K
6	TP
7	0Ω
8	120Ω

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

† MEASURED FROM OUTPUT OF M1
TP TIE POINT

383-11

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FOLDER 11

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25L6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲50	150	101386	AFH2-16	XB0161	FP214	TMD-13	D-070	TVL-2435
B	■50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.082	400	79814							10%
C3	.047	200	73553							10%
C4	.022	200	103766							10%

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	103952	B-70	A47-1Meg-Z	Q13-137	TA16A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	25K	½	103953	B-26	A47-25K-S	Q11-120	TA253L	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA VICTOR PART No.	NOTES
R3	27K		502327	
R4	47Ω	5	103040	
R5	220K		502422	
R6	120Ω		502112	
R7	4700Ω		502247	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA VICTOR PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω	3-4Ω	77993	Z1101 ①	A-3025①	A-3332①	26S58 ①	S-12X ①	① Bend ears down.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA VICTOR PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	79696	4A07	

SELENIUM RECTIFIER

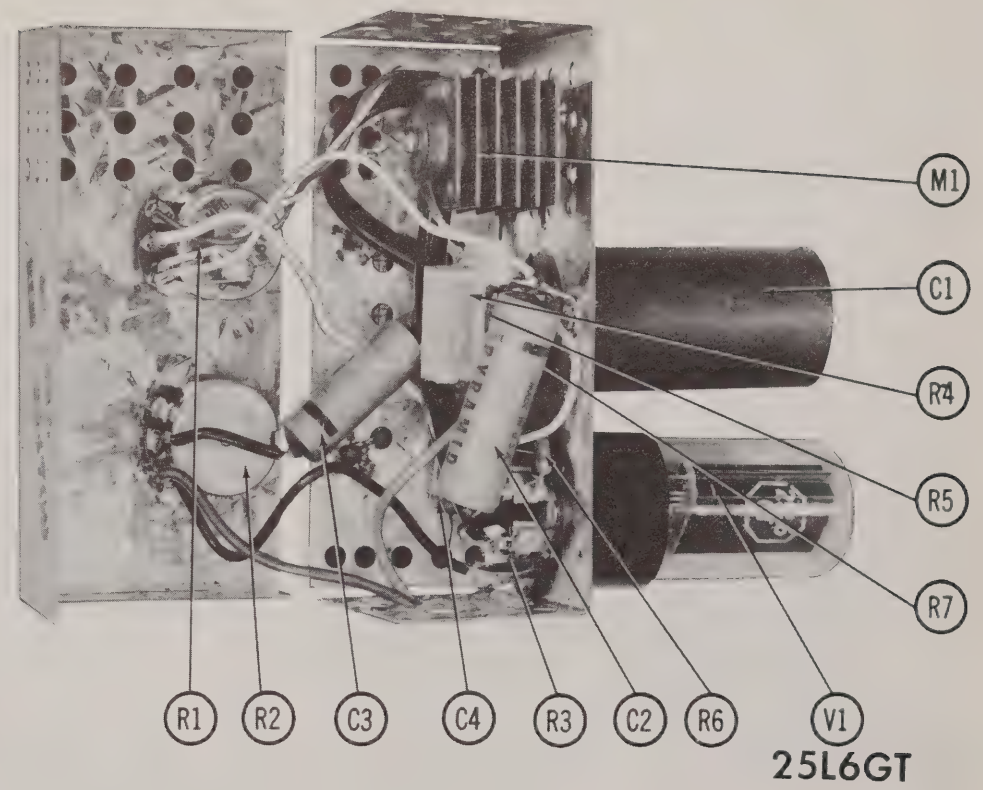
ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA RCA VICTOR PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.060A	77958	1003A	RS075	75	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA RCA VICTOR PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	103238 ①	62-1	K			① Includes M3

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA RCA VICTOR PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	102808	* A-67LP or † A-76LP or ♦ A-67LPD	* W-39MGA or † W-39MGS or ♦ W-39MGD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M4	Phono Motor	101694	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	101393	Volume (Ivory)
Knob	101394	Tone Control (Ivory)
Handle	103768	Spruce Green, Model 8-EY-31HE
Handle	103769	Rust Color, Model 8-EY-31KE

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

TRUETONE
MODELS D2857A, D2858A

TRUETONE
MODELS D2857A, D2858A

PROPERTY OF
L. F. ELMENDORF SHOP
3811 MONT. ST.
DENVER, COLORADO

MODEL D2857A

TRUETONE
MODELS D2857A, D2858A

TRADE NAME	Truetone Models D2857A, D2858A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.28 Amp. @ 117 Volts AC (27 Watts)
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in the same relative position to chassis as when the receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1640KC	"	"	A5	"
3.		Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D2857A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	E3214	PRS150V5030	BBRD5315	WD210	TDLD-8	FMD-301	TVA-2450
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	400	E306	P488N-05	DF-503	CUB4S5	GP-10000	GEM-415	4TM-S5	
C3	.01	600	E301	P688N-01	DD-103	CUB6S1		GEM-611	6TM-S1	
C4	.05	400	E306	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C5	.05	400	E306	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	E2518	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

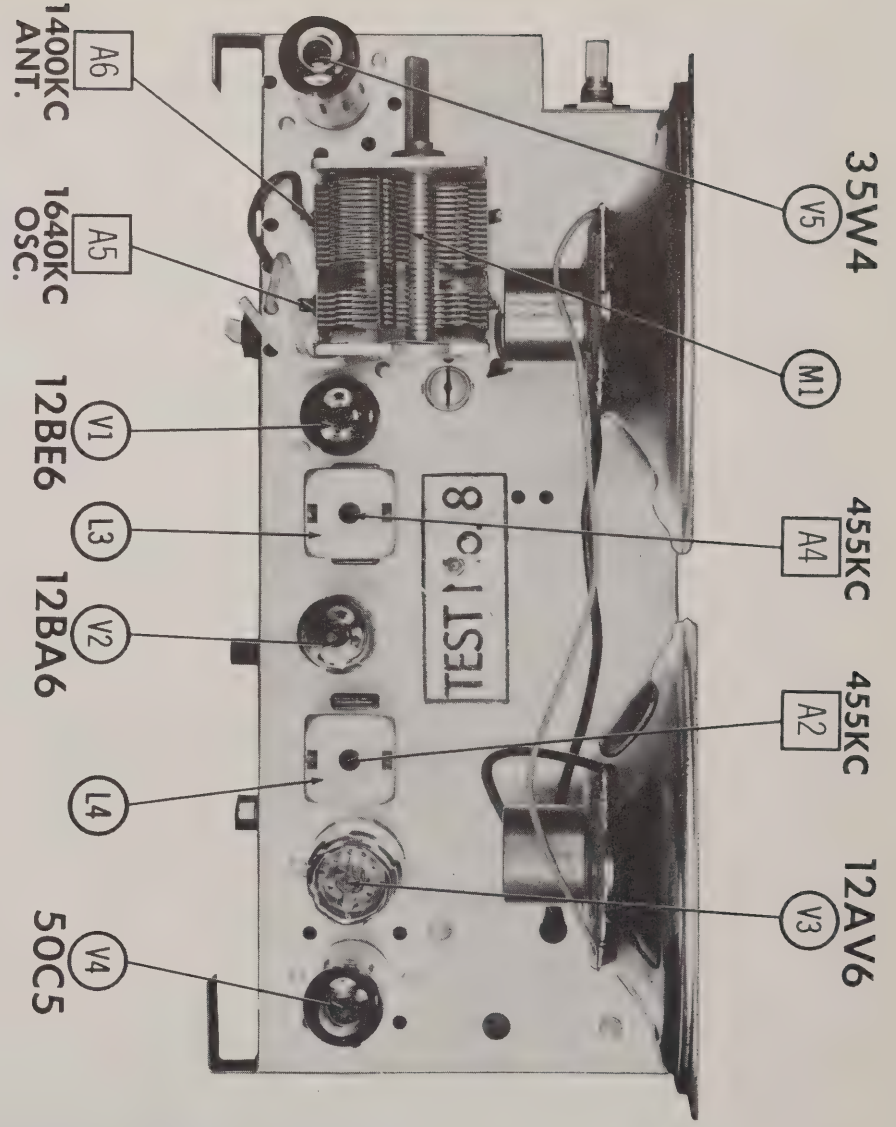
ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R2	22K			
R3	3.3Meg			
R4	150Ω			

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R5	150Ω			
R6	1500Ω	1		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	6-8Ω	E1114						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	E1017 ①	4A07 ①	① Connect in series and phase.
SP2	4"	PM	3-4Ω	E1014 ①	4A07 ①	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	E6022				
L2	Osc. Coil	E6127X	14-1073		69-OSC	
L3	Input IF	E6256	16-6758	BC-352	12-C1	
L4	Output IF	E6256	16-6758	BC-353	12-C2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	220MMF, 2000MMF, 220MMF, 5000MMF, 220MMF, 6.8Meg, 470K, 470K	E3015	Sprague DT-3

MISCELLANEOUS

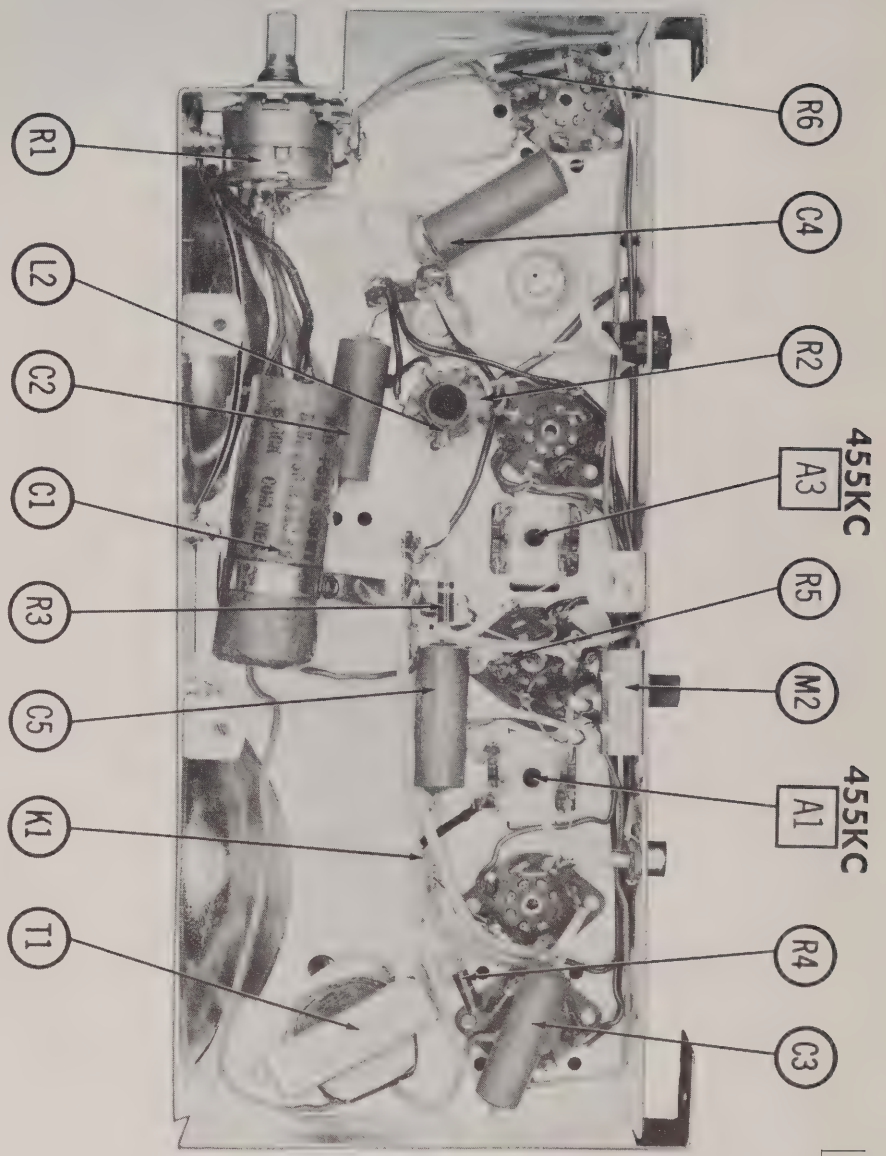
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M1	Tuning Cap.	E3518	2 Gang (Ant. 20-380MMF, Osc. 20-130MMF)
M2	Switch	E1210	Radio-phono (Slide type - DPDT)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E5060	Tuning, Turquoise or Ivory (Specify color)
Knob	E5062	On-Off-Volume, Turquoise or Ivory (Specify color)
Cabinet	E7037	Turquoise or Ivory (Specify color)

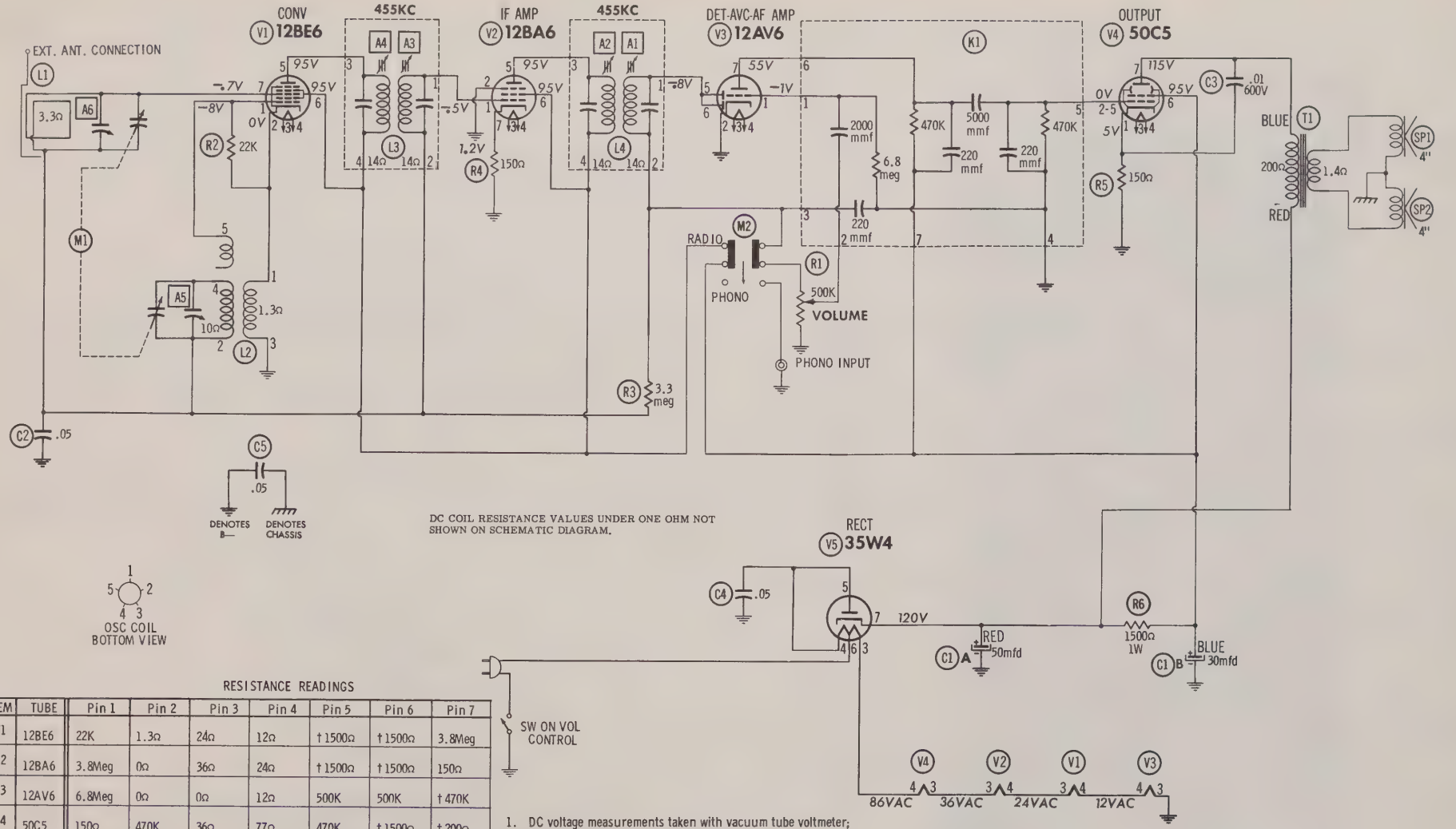
CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2857A

FOLDER 12

TRUETONE MODEL D2857A



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

OSC COIL BOTTOM VIEW

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1.3Ω	24Ω	12Ω	†1500Ω	†1500Ω	3.8Meg
V2	12BA6	3.8Meg	0Ω	36Ω	24Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500K	500K	†470K
V4	50C5	150Ω	470K	36Ω	77Ω	470K	†1500Ω	†200Ω
V5	35W4	NC	TP	77Ω	110Ω	110Ω	105Ω	20K(Min)

† MEASURED FROM PIN 7 Of V5.
NC NO CONNECTION.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

383-12

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

WILCOX-GAY MODELS 375, 750

WILCOX-GAY MODELS 375, 750

PROPERTY OF
L F [illegible]HIP
[illegible] S.
DENVER, COLORADO

WILCOX-GAY MODELS 375, 750

GENERAL INFORMATION

Models 375 and 750 Wilcox-Gay "Recordio" features fingertip operation for Fast Forward, Playback, Record and Fast Reverse. The "Recordio" is designed to record and play back two tracks of material on standard width recording tape, which doubles the playing time of a standard 5" or 7" reel of tape with no loss of frequency response or quality. Recordings can be played back through the self-contained speaker or an external speaker through use of the Auxiliary Speaker Jack.

These Models have two tape speeds, 3 3/4" and 7 1/2" per second. To change the speed, the mechanism has to be removed from the carrying case and the drive belt (65) shifted to the desired speed groove on the motor drive pulley (73) and the Flywheel (64). Using both tracks, the recording time is as follows:

Size	3 3/4" Speed	7 1/2" Speed
5" reel	1 hour	1/2 hour
7" reel	2 hours	1 hour

The "Recordio" is designed to operate on 60 cycles, 115 volts, AC supply.

CAUTION: Severe Damage Will Result If Connection Is Made To A Direct Current (D. C.) Line.

MANUFACTURED BY :

WILCOX-GAY CORPORATION
CHARLOTTE, MICHIGAN

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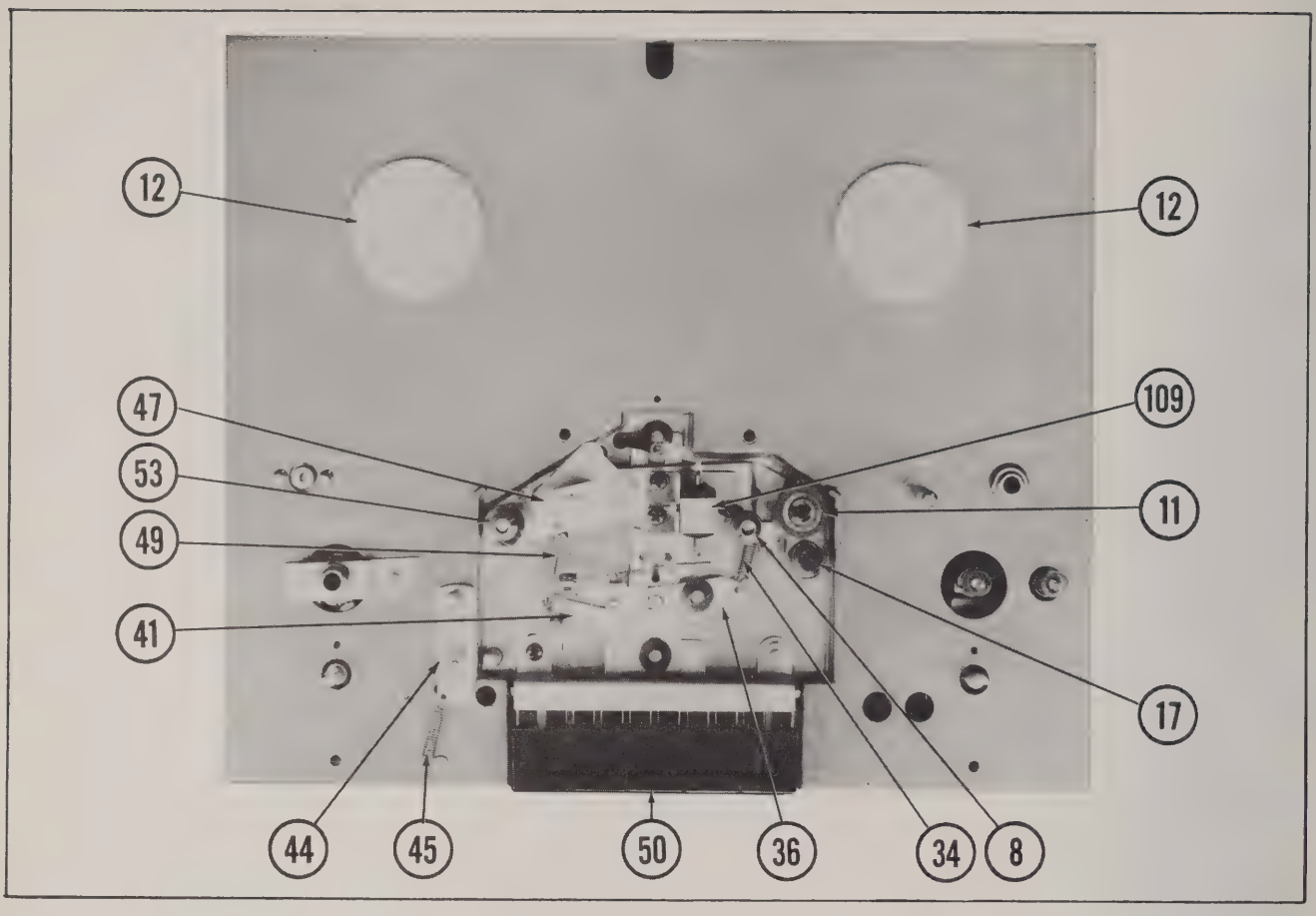


FIGURE 1

OPERATING INSTRUCTIONS

1. Plug the A. C. cord into a convenient wall receptacle of the proper rating.

Threading The Tape –

1. Place a reel of tape on the left spindle (12) and an empty reel on the right spindle (12) making sure the reel slots engage the reel pin on the spindles.

2. Unwind about 14" of the tape from the reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side of the tape faces the rear of the recorder.

NOTE: This recorder uses Type "A" wound tape i. e. the dull magnetic coated side faces inward on the reel. If the tape to be used is Type "B" (coated side facing outward) place the reel on the left spindle so that the tape will lead-off in a clockwise direction. Bring the tape behind the rear cover (2) (not through the head slot) and thread it on to the right reel in the normal manner. Press the "Forward" button and allow the full reel of tape to wind on the empty reel. The dull side of the tape will now be facing inward on the reel.

3. Insert the free end of the tape through the hub of the right take-up reel and place a pencil firmly over the tape, forcing it into one of the three radial slots on the hub of the empty reel. Turn the reel several turns with the pencil in this position until the tape is secured to the reel and all slack is taken up between the reels.

To Record From Microphone –

1. Turn the On-Off Volume Control to the right until a click is heard and allow about thirty seconds for the unit to warm up. The pilot light located above the "Stop" button will glow when the unit is turned on.

2. Insert the microphone plug into the "Microphone Input Jack".

3. The speed can be set by placing drive belt (65) in the desired speed grooves on the motor pulley (73) and flywheel (64).

4. Move record lock lever (44) downward with the left hand. This releases the record safety lock which prevents accidental erasure.

5. Depress the "Record" button with the right hand (while holding the record lock lever (44) with the left hand) until it latches.

6. While talking into the microphone, adjust the "Volume" control until no flashing occurs at the "Overload" indicator.

NOTE: Correct recording volume is very important. Too weak a signal will result in weak playback and high background noise. Too strong a signal, causing the "Overload" indicator to flash, will result in distortion during playback.

To Record From External Radio –

Recordings can be made from a radio by placing the microphone near the loudspeaker of the radio;

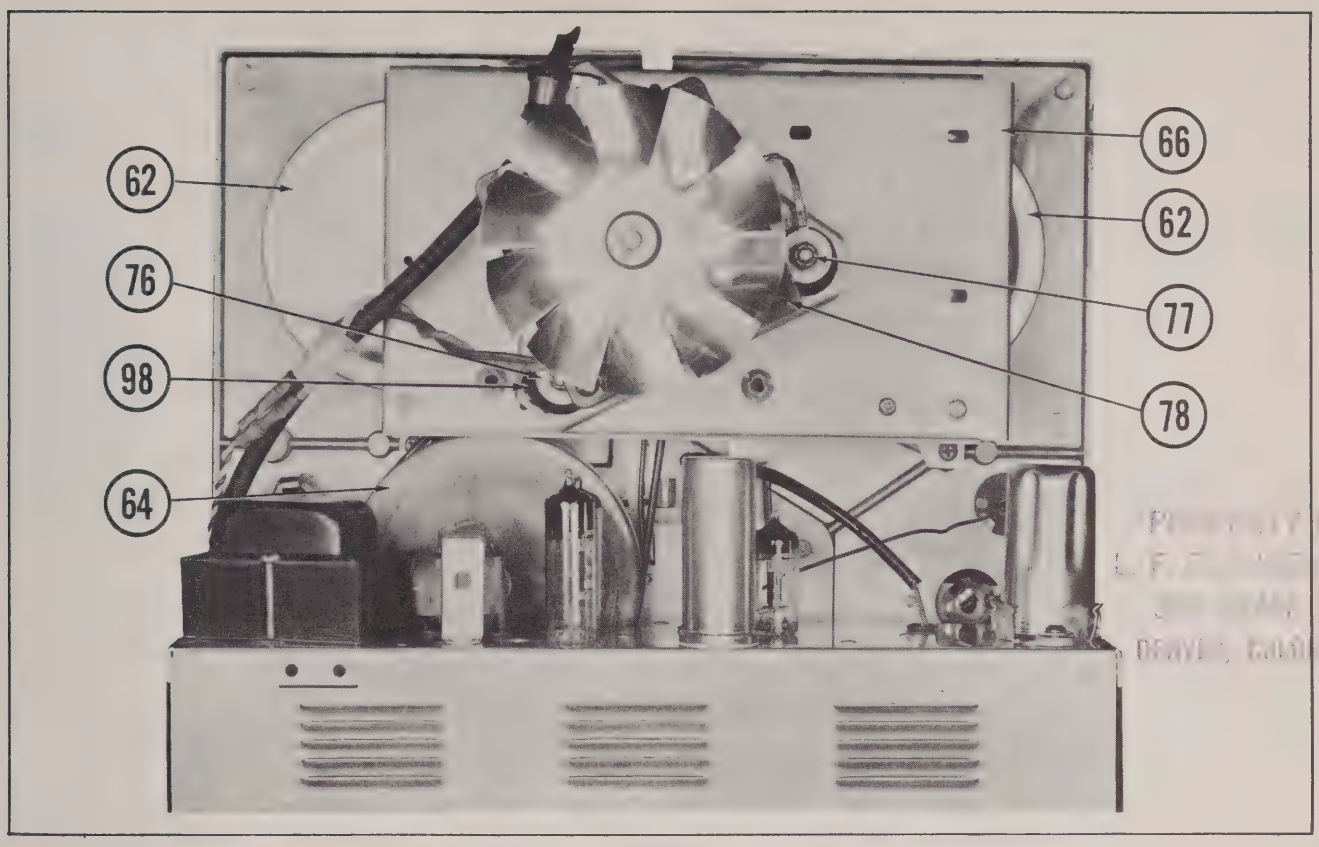


FIGURE 2

however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which, as a result, will be recorded on the tape. A superior quality recording can be made by use of radio-phono attachment cord (Part No. C-30.233). Connect attachment cord as follows:

1. Connect the cord clips across the voice coil terminals on the radio speaker.

2. Insert the cord plug into the "Radio-P.A. — Phono Jack".

3. Proceed as described in "To Record From Microphone".

NOTE: Remove attachment cord after recording is completed.

To Record From Phonograph —

1. Connect the cord clips of the attachment cord to the pickup leads on the external phonograph.

2. Insert the attachment cord plug into the "Radio-P.A. — Phono" jack.

3. Proceed as described in "To Record From Microphone".

NOTE: Should a hum develop from the above connection, reverse the cord clips on the pick-up leads.

To Record From Television Receiver —

1. Connect attachment cord as described in "To Record From External Radio" and proceed with recording as described in "To Record From Microphone".

NOTE: The "Recordio" Tone Control does not operate during recording. When recording from radio or a television receiver, set the radio or television tone control for maximum treble.

Dual Track Recording —

The Recordio is designed so that 1/2 the tape width is recorded at a time; thereby resulting in two track recording. This two track operation is accomplished in the following manner:

1. After a reel of tape has been recorded, i.e. all of the tape wound on to the take-up reel, depress the "Stop" push button. This stops all movement of the tape.

2. Remove the reels from the recorder, turning the full reel over and placing it on the left spindle and the empty reel on the right spindle.

3. Properly thread the tape and proceed with the recording as in "To Record From Microphone".

4. After this track has been recorded, the first track of recording is ready to be played without rewinding.

(a) Place the full reel of tape on the feed reel (left) spindle and the empty reel on the take-up (right) spindle.

(b) Thread the tape making sure the dull side of the tape faces the record head.

(c) Set the controls as described under "To Play A Recording".

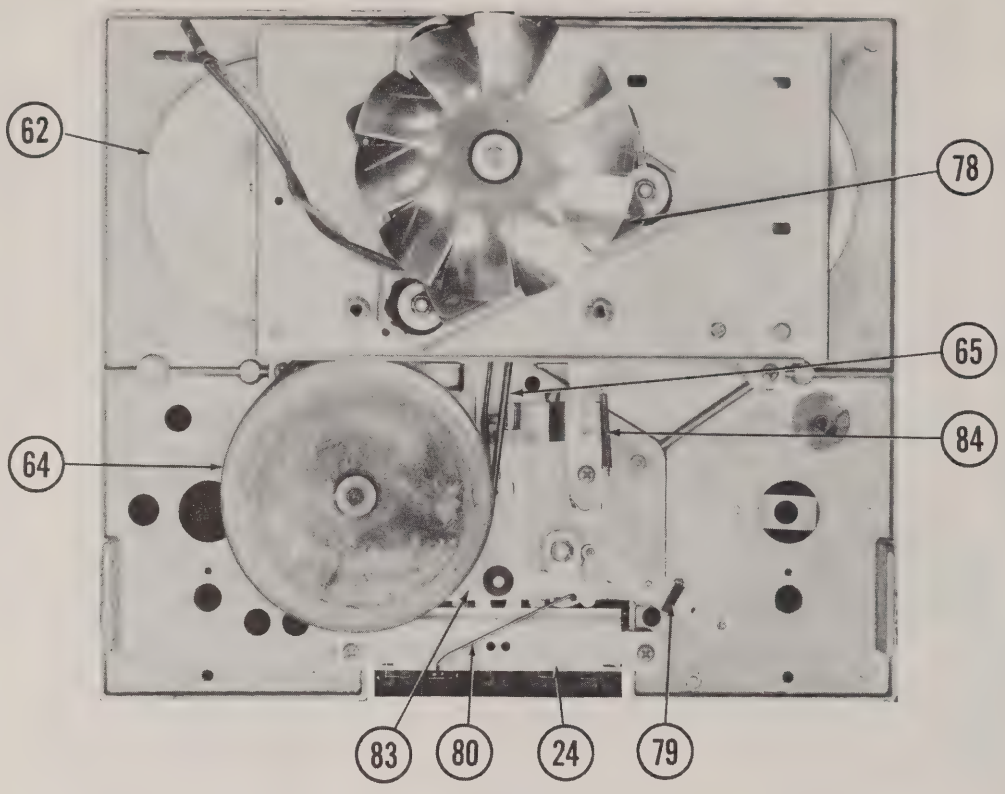


FIGURE 3

To Play A Recording —

1. Thread the tape as described under "Threading the Tape".

2. Turn the On-Off Volume control on and allow thirty seconds for the tubes to warm up.

3. Depress the "Play" button until it is latched into position.

4. Adjust the Volume and Tone control to suit.

To Use An External Speaker —

Any size speaker of the permanent magnet type, having a 3 ohm voice coil, may be used by connecting a speaker extension cord across the voice coil of the speaker and then inserting the extension plug (same type as microphone plug) into the External Speaker Jack located on the right side of the cabinet. This automatically cuts out the self-contained speaker.

To Edit And Splice Tape —

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused section of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

Fast Reverse —

High-speed reverse wind can be obtained by pressing the desired button. This is used primarily in locating a desired portion of a recording in a few seconds.

CAUTION: The "Stop" button should always be depressed before changing functions. Always depress the "Stop" button when the Recordio is not in use.

Erasing Recorded Material —

Erasing of recorded material takes place automatically when new material is recorded; therefore, no special step is necessary to erase recordings before new recordings are made. However, if a portion of a recording or an entire reel of tape is to be completely erased, do so as follows:

1. Properly thread the tape on the machine.

2. Turn the Volume Control knob clockwise until a click is heard. This turns the recorder on.

3. Press down on the Record button until it latches into position. The erasing of recorded material is now in process and may be stopped at any time by depressing the "Stop" button.

NOTE: Only one track of recorded material is erased at a time. To erase the second track, reverse the reels and repeat the above operation.

To Use Recorder As A Public Address System —

The recorder may be used for public address with or without recording the material at the same time. Plug in an external speaker as described in

"To Use An External Speaker". Turn the recorder on and depress the Record button, but do not use tape. Be careful to maintain a sufficient distance between the microphone and external speaker to prevent feedback howl. If it is desired to record the program, thread the tape as previously described before depressing the RECORD button.

If the Recordio is to be used to play through an auxiliary amplifier or public address system, connect a shielded cord from the "Radio — P.A. — Phono" jack on the Recordio panel to the phonograph input circuit of the auxiliary amplifier. Patch Cords No. C-20.233 or No. 9-2249 are available for this purpose. (No. C-20.233 is equipped with a pin-plug to fit the Radio — P.A. — Phono jack on the Recordio and with a pair of connecting clips at the opposite end. No. 9-2249 is equipped with a similar pin plug at both ends). Set the Recordio volume control at minimum volume position, and adjust the level of sound with the volume control of the auxiliary amplifier.

ADJUSTMENTS

Disassembly Instructions—

1. Remove two Phillips head screws from rear of case.

2. Remove push-on type volume and tone control knobs.

3. Remove two screws located under volume and tone control knobs. Remove escutcheon.

4. Remove two hex head screws located under escutcheon.

5. Lift unit out of case, removing leads from speaker before removing unit completely.

Record-Play Adjustment—
(See Exploded View)

To adjust the record-play head (109) for maximum frequency response, make the following adjustment:

1. Remove the rear cover escutcheon (2).

2. Properly thread an alignment tape or a good recorded tape on the machine.

3. Set the controls as described under "To Play A Recording".

Grip the vertical portion of the record head mounting bracket with a pair of long-nosed pliers. Rock the mounting bracket and record head from side to side slightly until the maximum high frequencies are obtained. Bend the bracket with the pliers to obtain a permanent set at this position.

4. Replace the rear cover escutcheon (2).

Pressure Pad Adjustment —
(See Exploded View)

1. Remove the front and rear escutcheons (2 and 6).

2. Depress the "Play" button. Do not turn the recorder on.

3. Use a pencil type postal scale and check the amount of pressure necessary to just pull the pad away from the tape. The test should be made on the end of the pressure pad mounting spring (107). Adjust the pressure pad for 1 3/4 oz. ± 1/4 oz. pressure.

(a) The record-head pressure pad is adjusted by the locked adjustment screw (51).

(b) The guide post pressure pad is adjusted by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.

4. After the adjustments are made, depress the "Stop" button and replace the trim covers.

Erase Head Adjustment —

1. With tape properly threaded, turn recorder on and depress the Record button. Allow tape to run for a few seconds then turn recorder off, but leave Record button depressed.

2. With the trim covers removed, check the erase head (47), to see if it is parallel with the tape.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head (junction of long diagonal slot and short vertical slot). To adjust level of tape, loosen set screw (7), and rotate tape guide post (53) to move tape up or down. Tighten set screw (7).

4. Replace the trim covers.

Brake Shoe Adjustment —

1. In order to adjust the brake shoes, the complete mechanism must be removed from the carrying case and the speaker disconnected.

2. With all push buttons in the up position, the brake shoe should clear the drums by approximately 1/8".

3. Depress the "Stop" pushbutton while observing the brake shoes. Both brake shoes must contact the drums at the same time and with equal pressure.

4. The adjustment is accomplished by bending the spring arm.

Adjustment For Slow Take-Up Reel —

There are some instances where the spring drive belt (56) stretches after a period of time. In this case, the belt should be replaced.

Bias Adjustment —

Turn the recorder on and depress the "Record" button; use no tape. To determine if the bias is within satisfactory limits without dismantling the unit, merely connect a VTVM from the top lug of the recording head to the chassis. If 75 to 100 volts are present, no adjustment is necessary.

If the readings are outside of this range, proceed as follows:

1. Try a new 12AX7 tube.

2. If still not within range, remove the chassis, shield and connect a low capacity VTVM from Pin 1

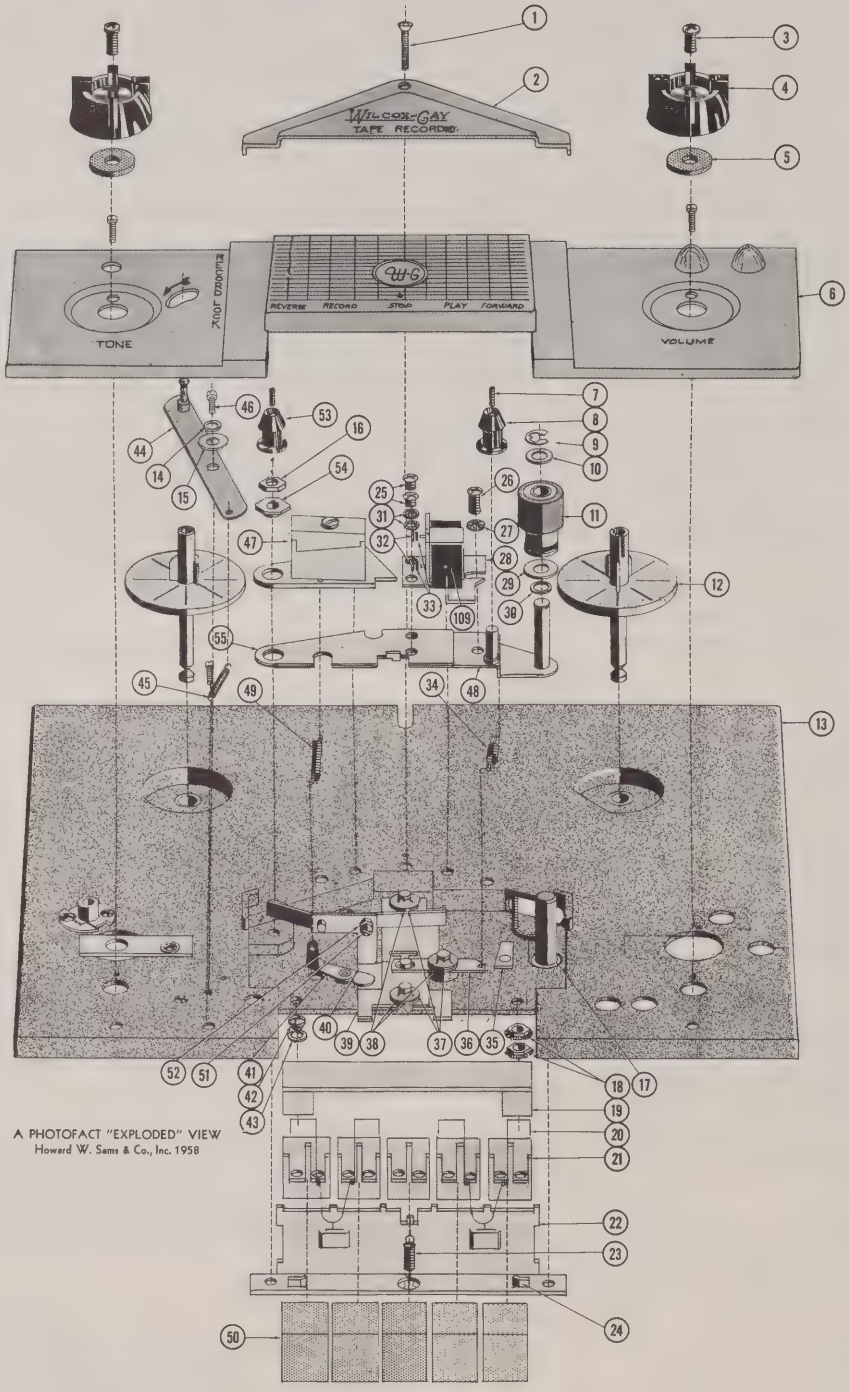


FIGURE 4A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

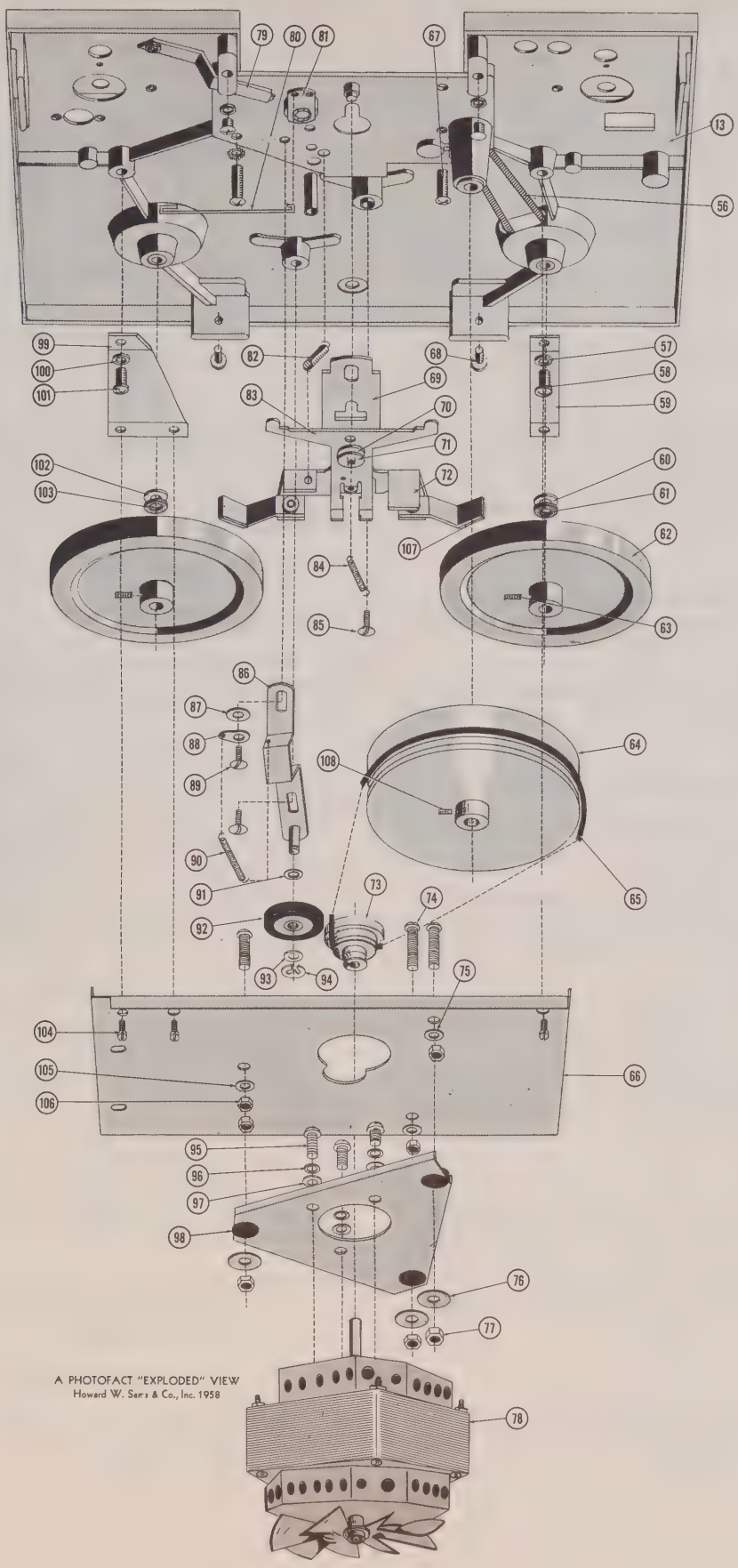


FIGURE 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE.

of the 6AQ5 to the chassis and adjust trimmer (C18) to obtain a reading of 2.25 volts. This provides the optimum in performance.

Neon Record Level Indicator —

The neon record indicator firing level adjustment is only required if a neon bulb is replaced. The neon record level indicator is adjusted for correct firing level by means of a trimmer capacitor (C21).

To adjust indicator, proceed as follows:

1. Turn "Recordio" on and depress "Record" button.

2. Connect a short jumper lead across the bias oscillator coil (L1), (short out the coil to disable the oscillator).

3. Connect an audio oscillator, set at 1000 cycles, into the microphone input jack. Output of audio oscillator should be approximately .01 volts. (A 1 volt output may be used with a 100 to 1 reduction pad of resistors inserted between the audio oscillator and the microphone jack.)

4. Connect probe of low type AC VTVM to junction of the 330K ohm resistor, R30 (mounted on terminal strip near volume control).

5. Adjust volume control to obtain a reading of 36 volts on VTVM and leave control set and VTVM connected.

6. Remove short from bias oscillator coil.

7. Adjust indicator trimmer (C21) for just barely lighting the indicator bulb.

IMPORTANT: Do not readjust the recording bias oscillator adjustment after setting the indicator light adjustment.

TROUBLES

Push Buttons Fail To Latch Into Position —

1. Lock plate spring (23) loose or broken, resulting in the lock plate not being held against the hinge bracket (22).

Fails To Erase —

1. Spring (49) loose or broken, resulting in the erase head (47) not being pulled forward to engage the tape.

2. Erase head not aligned properly. See "Erase Head Adjustment".

No Reverse —

1. Idler lever tension spring (90) may be loose or broken; if so, the idler lever (86) will not be actuated. Replace spring (90).

Tape Fails To Wind On Reel During Record Or Playback —

1. Reel Drive Spring (56) loose or broken.

Speed Variation Or "Wow" —

1. Check capstan (17), pinch roller (11), idler (92), motor pulley (73), and flywheel (64) for oil or foreign material. Clean these parts with a good cleaning fluid.

2. Check motor pulley (73) to see if it is secured to motor.

3. Check idler tension spring (90); see if it is holding the idler engaged with motor pulley and flywheel.

Tape Overruns Or Spills When Stop Button Is Depressed During Fast Forward Or Rewind —

1. Brake shoes out of adjustment. See "Brake Shoe Adjustment".

2. Brake pads worn out. Replace pads.

Failure To Record —

1. Tape pressure pad not adjusted properly, resulting in the tape not being held against the recording head (109). See "Pressure Pad Adjustment".

2. Record head (109) loose on its mounting. Adjust head and tighten into position as described under "Record-Play Head Adjustment".

3. Check the recording tape to see if the dull-coated side faces inward on the reel. If the dull side faces outward, a recording cannot be made. If this condition exists, wind the tape onto an empty reel, as described in "Threading The Tape".

CLEANING

The record head, capstan and pressure roller

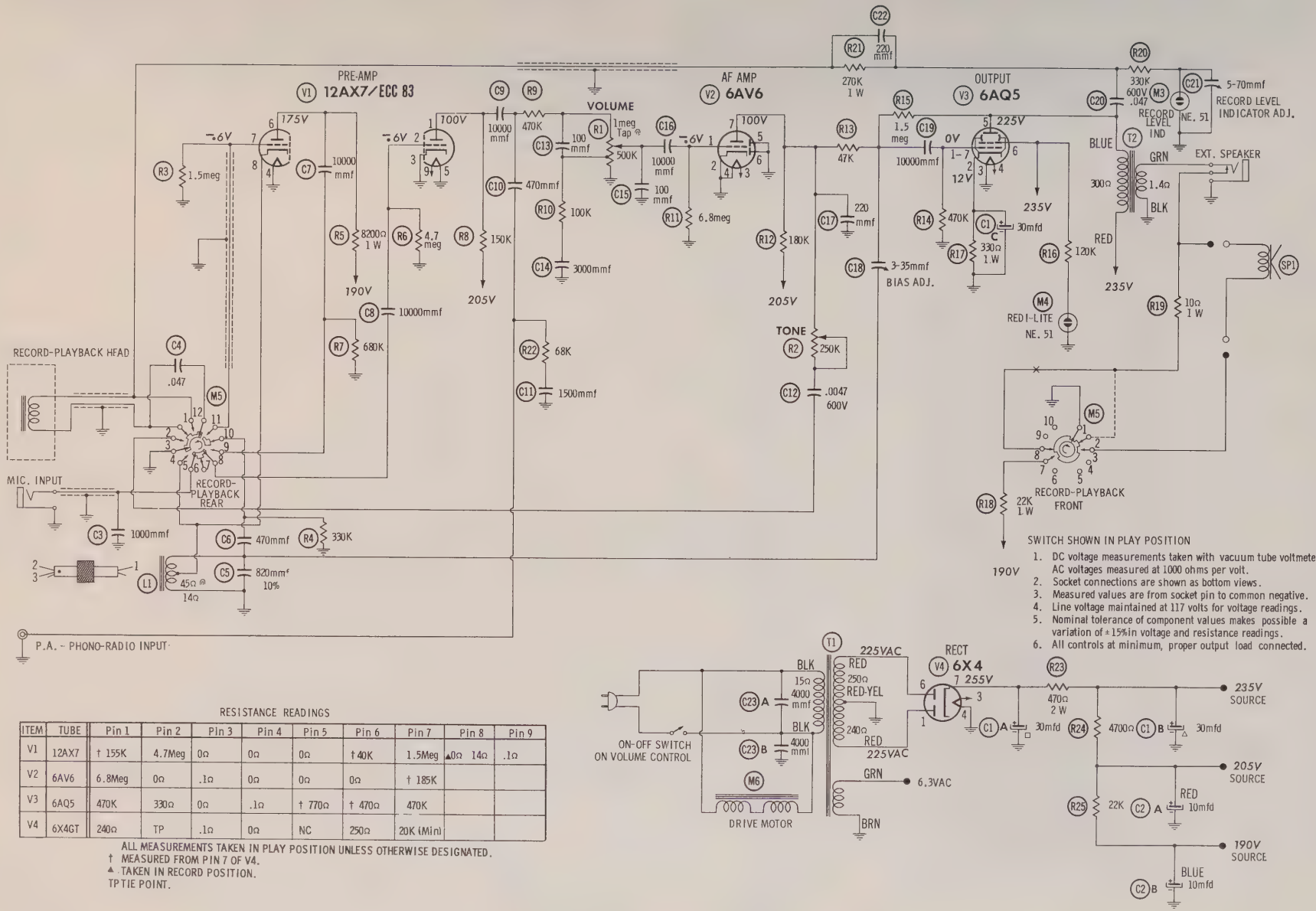
An occasional cleaning out of foreign matter under the plastic pushbutton cover is desirable, and a small drop of oil on the sliding lever members is advisable.

are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, capstan and pressure roller.

CAUTION: Do not use a brush when cleaning the recording head as this could possibly mar the laminations.

LUBRICATION

All rotating parts are provided with generous size oilite bearings, which are factory lubricated and require no further attention.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	† 155K	4.7Meg	0Ω	0Ω	0Ω	† 40K	1.5Meg	▲0Ω 14Ω	.1Ω
V2	6AV6	6.8Meg	0Ω	.1Ω	0Ω	0Ω	0Ω	† 185K		
V3	6AQ5	470K	330Ω	0Ω	.1Ω	† 770Ω	† 470Ω	470K		
V4	6X4GT	240Ω	TP	.1Ω	0Ω	NC	250Ω	20K (Min)		

ALL MEASUREMENTS TAKEN IN PLAY POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 7 OF V4.
▲ TAKEN IN RECORD POSITION.
TP TIE POINT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

383-13

WILCOX-GAY
MODELS 375, 750

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7/ ECC83	
V2	AF Amplifier	6AV6	

ITEM No.	USE	TYPE	NOTES
V3	Output	6AQ5	
V4	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Wilcox Gay PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 30	250	5-437	AFH3-99	C0720	FP331	TMT-81	T-395	TVL-3419
B	▲ 30	250							
C	30	25							
C2A	10	200	5-444	PRS250V1010	BBRD1145	TCD52	TDLD-26	FMD-4510	TVA-2722
B	10	200							

FIXED CAPACITORS

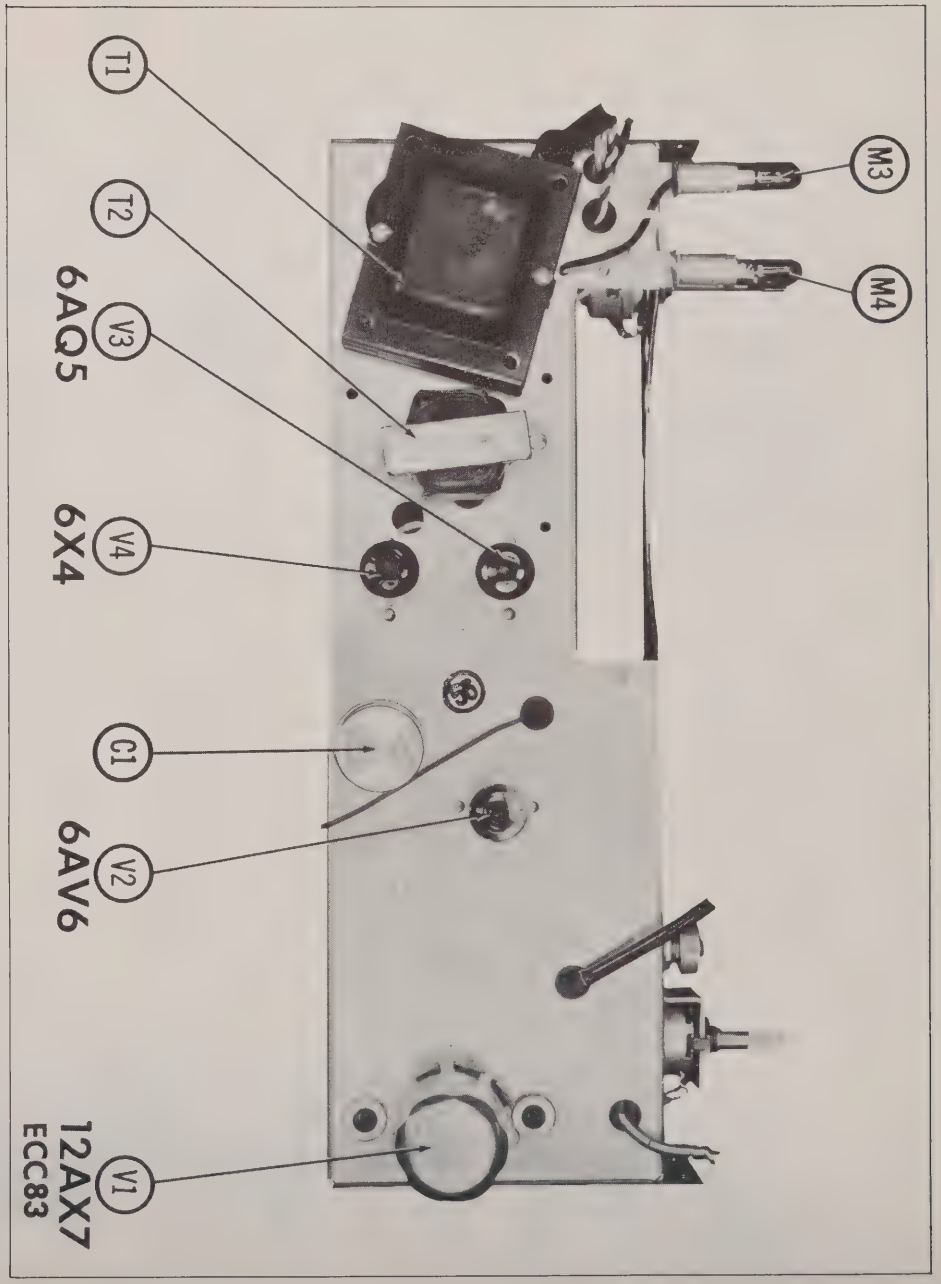
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Wilcox Gay PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	1000			SI1000	D6-102	LT6D1	GP-1000	UC-521	5GA-D1	
C4	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C5	820			1464-00082	D6-821	1R5T82	ED-820		MS-382	10%
C6	470			SI470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C9	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C10	470			SI470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C11	1500			SI1500	D6-152	LT6D15	GP-1500	UC-5215	5GA-D15	
C12	.0047	600		P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6147	6TM-D47	
C13	100			SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C14	3000			SI3000	D6-302	LT6D3	GP-3000	UC-523	5GA-D3	
C15	100			SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C16	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C17	220			SI220	D6-221	LT6T22	GP-220	UC-5322	5GA-T22	
C18	3-35									
C19	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C20	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C21	5-70									
C22	220			SI220	D6-221	LT6T22	GP-220	UC-5322	5GA-T22	
C23A	4000			BPD-2X004	DD-402	BYC6DD4	ED2-004	DCD524	5HK-2D4	
B	4000									

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Wilcox Gay PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	C8-227-2	BT-71	A47F5-1Meg	Q19-137X	UT-443	Volume Tap @ 500K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	KB-1	
R2A	250K	½	C8-231-1	B-51	A47-250K-Z	Q13-130	U44	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Wilcox Gay PART No.	IRC PART No.	
R3	1.5Meg			BTS-1.5Meg	
R4	330K			BTS-330K	
R5	8200Ω	1		BTA-8200	
R6	4.7Meg			BTS-4.7Meg	
R7	680K			BTS-680K	
R8	150K			BTS-150K	
R9	470K			BTS-470K	
R10	100K			BTS-100K	
R11	6.8Meg			BTS-6.8Meg	
R12	180K			BTS-180K	
R13	47K			BTS-47K	
R14	470K			BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Wilcox Gay PART No.	IRC PART No.	
R15	1.5Meg			BTS-1.5Meg	
R16	120K			BTS-120K	
R17	330Ω	1		BTA-330	
R18	22K	1		BTA-22K	
R19	10Ω	1		BTA-10	
R20	330K			BTS-330K	
R21	270K	1		BTA-270K	
R22	68K			BTS-68K	
R23	470Ω	2		BTB-470Ω	
R24	4700Ω			BTS-4700	
R25	22K			BTS-22K	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Wilcox Gay PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .30A	440VCT @ .041A	6.3V @ 2.1A		92.81					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Wilcox Gay PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3200Ω	6-8Ω	9.280	Z1001		A-2203 ①	22S86	S-51X ①	① Drill new mtg. hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Wilcox Gay PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	30.345-2	4A1Z6	

COILS

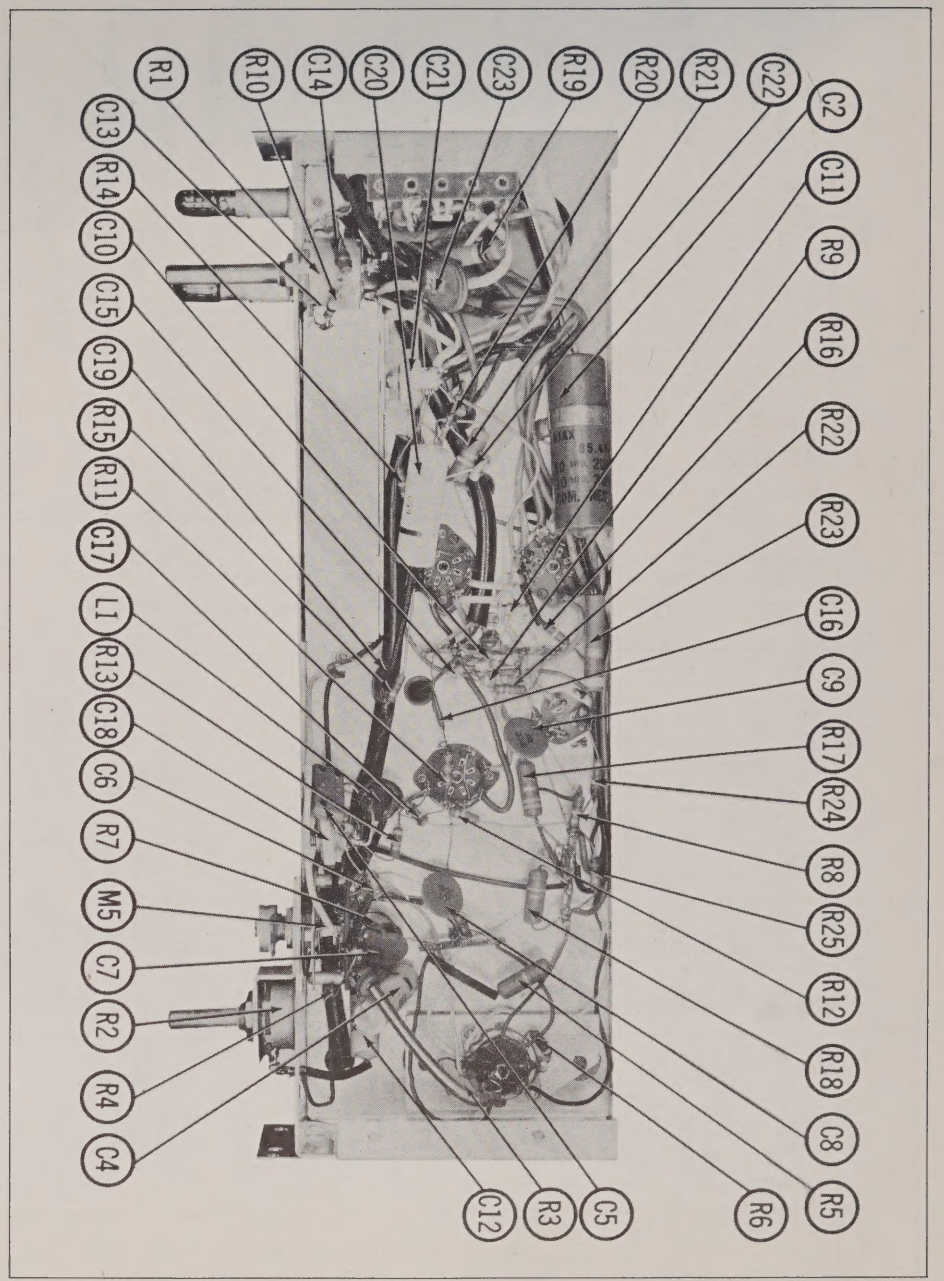
ITEM No.	USE	REPLACEMENT DATA				NOTES
		Wilcox Gay PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Bias Osc.	1.557				

* Tapped @ 14Ω.

MISCELLANEOUS

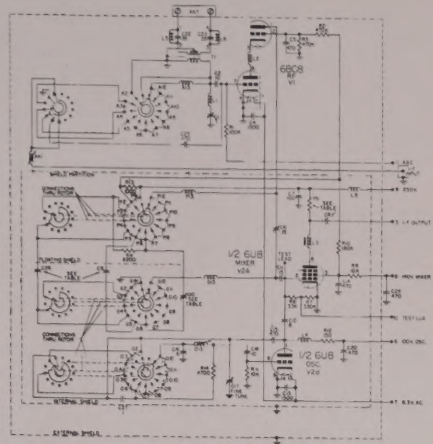
ITEM No.	PART NAME	Wilcox Gay PART No.	NOTES
M1	Erase Head	35-756	Both Models
M2	Record Head	36-156	Both Models
	Record Head	36-181	Both Models
M3	Indicator Light		Type NE51
M4	Indicator Light		Type NE51
M5	Switch		Record & Playback (Rotary Wafer Type)
M6	Motor	36-154	Models 750 & 375

CHASSIS—BOTTOM VIEW

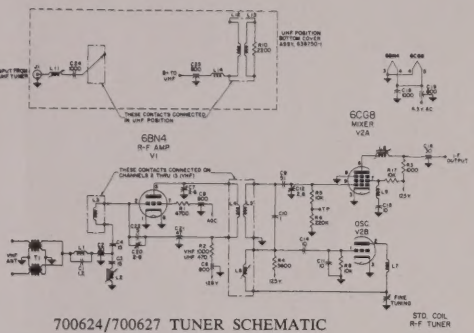


MECHANICAL PARTS LIST

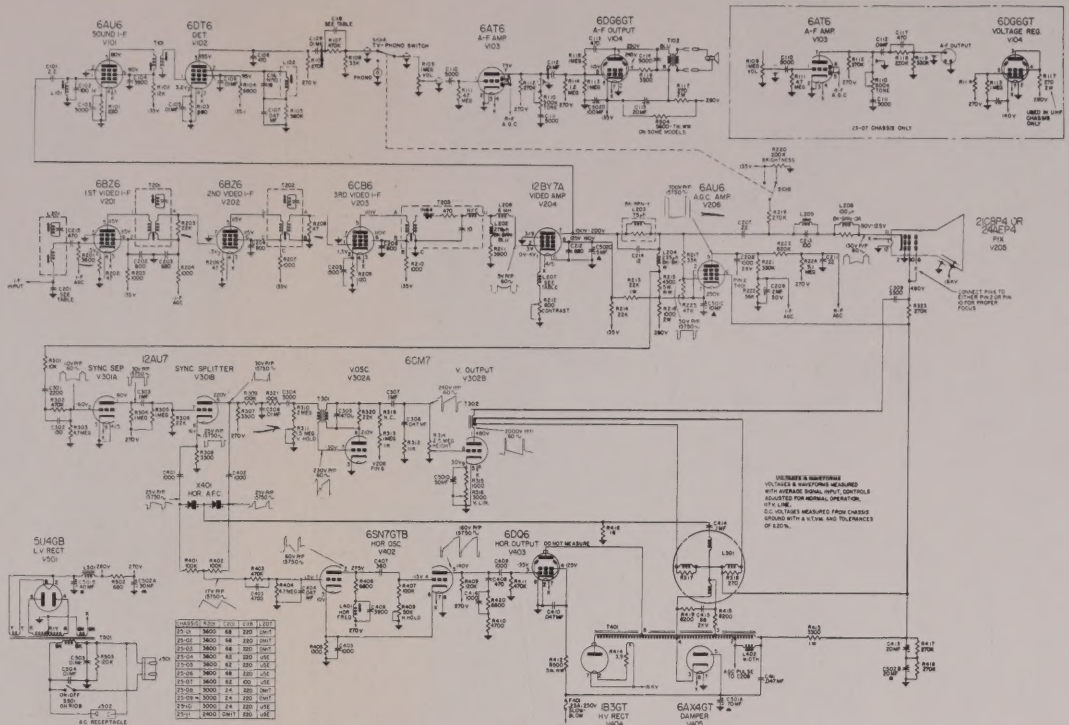
Ref. No.	Part No.	Description
1		Screw
2	13.264-1	Rear Escutcheon
3		Screw, 8-32 x 1 O.H.M.S., Phillips Stl. Stat. (2)
4	8.231-1	Knob (2)
5	73-2254	Washer, Felt, 3/4 O.D. x 1/4 I.D. (2)
6	13.295-3	Front Escutcheon, Silver
	13.295-4	Front Escutcheon, Gold (Alternate Part)
7		Set Screw (2)
8	B-32.260D	Tape Guide (Right)
9		"C" Washer
10	73-2340	Varnished Impregnated Linen Washer
11	33.404	Pinch Roller
12	13.318-0	Nylon Reel Pan And Shaft Ass'y. (2)
13	D-35.807-1	Base Plate Assembly, Green
14		Washer
15		Washer
16		Nut, Hex
17	32.259	Capstan Shaft
18		Nut, #6-32 Hex
19	B-19.858	Push Button Retainer Bracket
20	B-31.337A	Push Button Return Spring (2)
21	B-35.755B	Push Button Ass'y. (5)
22	B-19.859D	Hinge Bracket For Push Buttons
23	B-31.343A	Lock Plate Spring
24	B-19.870	Locking Plate For Push Buttons
25		Head Mounting Screws, #6-32 R.H.M.S. (2)
26		Screw, #6-32 R.H.M.S.
27	73-2231-4	#6 Lockwasher
28	B-35.854	Head Mounting Bracket Ass'y.
29	73-2340	Linen Washer
30	73-2231-4	Washer
31		Lockwasher (2)
32		#2-56 Hex Nut, C.P. (2)
33		#2 Int. Lockwashers (2)
34	B-31.336D	Pinch Roller Tension Spring
35	B-19.884-B	Hold Down Bracket
36	B-19.881-C	Playback Actuating Lever
37	B-33.412	Push-On Stud Nut, 3/16 Stud (3)
38	73-2241-148F	Flat Washer (3)
39	B-19.868-A	Record Slide Plate
40	B-35.758	Playback Slide Plate Ass'y.
41	B-35.766-C	Record Actuating Lever Ass'y.
42		Screw, #6-32 B.H.M.S., Phillips
43	73-2231-4	#6 Int. Lockwasher, Stl. C.P.
44	B-35.775B	Interlock Lever And Handle Ass'y.
45	B-31.338	Interlock Lever And Handle Ass'y. Return Spring
46	48-1C-13-1	#6-32 Hex Nut, Steel C.P.
47	B-35.794	Erase Head And Plate Ass'y.
48	B-35.824-B	Pinch Roller Plate Ass'y.
49	B-31.347-B	Erase Head Tension Spring
50	13.258-4	Push Button, Green (5) (Model 750)
	13.258-6	Push Button, Blue (5) (Model 375)
51		#6-32 Screw R.H.M.S. Steel C.P.
52	48-410-1	#6-32 Locknut
53	B-32.300	Tape Guide Post (Lift)
54	B-32.260-D	Tape Guide Post Spacer
55	B-35.794	Erase Head Plate Ass'y.
56	B-31.351A	Reel Drive Spring (Tension)
57	73-2231-5	#8 Int. Lockwasher
58		#8 Screw, R.H.M.S., Phillips
59	B-19.862C	Angle Bracket For Mounting Drive Ass'y.
60	B-28.163	Linen Washer
61	73-2241-134	Flat Washer
62	C-35.823-1E	Brake Drum And Bushing Ass'y. (2 Used)
63		#8-32 B.H.M. Screw (2 Used)
64		Flywheel
65		Drive Belt
66		Drive Mounting Plate
67		#8-32 R.H.M. Screw, Phillips (2 Used)
68		#8-32 R.H.M. Screw, Phillips (2 Used)
69	C-35.835	Brake Slide Plate Assembly
70	B-28.163	Linen Washer
71	B-33.412	Push-On-Stud Nut, 3/16" Stud
72	B-35.764	Pressure Pad Spring Assembly
73		Drive Pulley
74		Motor Adapter Plate Screw (3 Used)
75		Motor Adapter Plate Washer (3 Used)
76		Flat Washer (3 Used)
77		Hex Nut (3 Used)
78		Motor Type G.I. 20165
79	B-35.774	Record Interlock Ass'y.
80	B-31.333	Switch Arm Link
81	B-35.859-1	Switch Lever Ass'y.
82	B-31.338-B	Brake Return Spring
83	B-35.759-1	Shift Plate Assembly
84		Shift Plate Tension Spring
85		Screw
86		Fast Reverse Idler Wheel Bracket
87		Washer
88		Washer
89		Screw
90		Fast Reverse Idler Wheel Tension Spring
91		Washer
92		Idler Wheel
93		Washer
94		"C" Washer
95		Motor Mounting Screw
96		Washer
97		Washer
98		Grommet, Motor Mounting
99	B-19.863	Drive Mounting Plate Bracket
100	72-2231-5	#8 Int. Lockwasher
101		#8-32 R.H.M. Screw, Phillips
102	B-28.163	Linen Washer
103	73-2241-143	Flat Washer, Steel
104		Screw, Drive Mounting Plate
105		Washer (3 Used)
106		Hex Nut (4 Used)
107	B-31.335A	Brake Pad, Felt (2 Used)
108		Set Screw
109	C-36.156-E	Tape Recording Head (Shure TR16A)



700584-6 TUNER SCHEMATIC

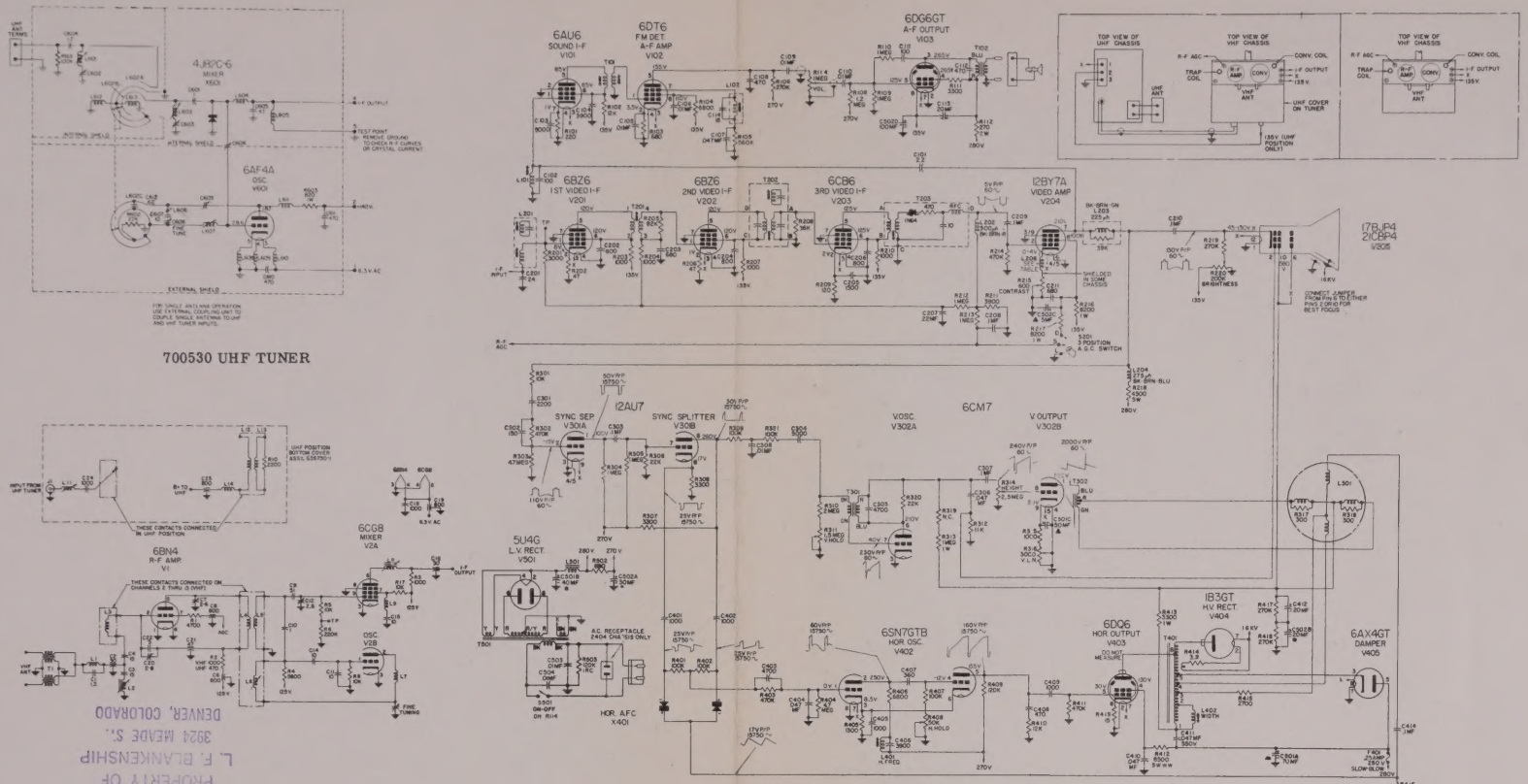


700624/700627 TUNER SCHEMATIC



MAGNAVOX	U25-05AA	U25-11AA	V25-06AA
CHASSIS	U25-06AA	V25-01AA	V25-07AA
U25-01AA	U25-07AA	V25-02AA	V25-08AA
U25-02AA	U25-08AA	V25-03AA	V25-09AA
U25-03AA	U25-09AA	V25-04AA	V25-10AA
U25-04AA	U25-10AA	V25-05AA	V25-11AA

SCHEMATIC COURTESY OF THE
MAGNAVOX COMPANY



SCHEMATIC COURTESY OF SPARTAN DIV., THE MAGNAVOX COMPANY

PROPERTY OF
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